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A

COURSE OF

LECTURES ON EDUCATION,

PHYSICAL, MENTAL, AND MORAL;

DELIVERED AT THE

Literary, Scientific, and Commercial Institution,

LIVERPOOL,

AND IN VARIOUS PARTS OF THE KINGDOM.

ROYAL COLLEGE OF SURGEONS ENGLAND

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ADDRESS.

A DEEP conviction of the value even of the plainest lessons, drawn from he Great Intelligence who has imparted to man the power of observing hem, has induced me to place before the Public this Course of Lectures, s delivered to crowded and delighted audiences in various parts of the ingdom.

But well knowing how many individuals this great nation can boast of, ho are better able to command and to reward the attention of a reader, should fear being accused of much presumption in so doing, if the any proofs of the progress which science is making in this country, had ot removed such a discouraging feeling; being, as they are, so many dications of that love of elevated studies, which raises the mind above e littleness of unkind criticism.

However brief and incomplete the sketch I have given (in the following ages) of a portion of the science of anatomy and physiology may be, et it may at least suffice to convey a slight conception of the nature of e phenomena of which I have treated. To shut out the fund of information anatomy contains, from all who do not devote themselves to the medical profession, is as unreasonable as it would be to exclude the nowledge of chemistry from every one but the practical pharmaceutist. n no other department of knowledge are the facts unfolded so curious, nd in few are they of greater practical value.

The obvious and peculiar advantages of this kind of knowledge are, hat it would enable its possessor to take a more rational care of his ealth; to perceive why certain circumstances are beneficial or injurious; understand, in some degree, the nature of disease, and the operations, s well of the agents which produce it, as of those which counteract it; observe the first beginnings of deranged function in his own person;

to give to his medical attendant a more intelligible account of his train of morbid symptoms as they arise; and, above all, to co-operate with him in removing the morbid state on which they depend, instead of defeating, as is now through gross ignorance constantly done, the best concerted plans for the renovation of health.

It would likewise lay the foundation for the attainment of a more just, accurate, and practical knowledge of our intellectual and moral nature. There is a physiology of the mind as well as of the body; both are so intimately united, that neither can be well understood without the study of the other; and the physiology of man comprehends both.

Were even what is already known of this science, and what might b easily communicated, made a part of general education, how many evil would be avoided, how much light would be let in upon the understanding, and how many aids would be afforded to the acquisition of a soun body and a vigorous mind;—pre-requisites more important than i commonly supposed, to the attainment of wisdom, and the practice c virtue.

T. W. RENWICK.

1842.

INTRODUCTION.

Ladies and Gentlemen,

The subject which I have selected for the present occasion, is one to which my profession has, of course, often drawn my attention; and it seems to me to possess no small degree of interest for students of every description. We are all more or less students of human habits and character. We are all more or less occupied with the never-ending study of our own unfathomable nature.

We behold the world peopled with beings diverse in appearance, but acknowledging the same senses, affections, passions, and mental movements as ourselves, helpless in childhood, slowly matured, disciplined by events, improved by observation and knowledge, and yet destined to inevitable decay. Links between the past and the future, between the generation which we are following and that which is succeeding us, we have yet time to behold the earth and the sea, and their countless productions; to measure the distances, motions, and amazing magnitude of some of the stars; we can discover some of the physical laws which govern the things that surround us, and which laws we ourselves obey. But of all that we behold, no object seems more worthy of our curious study than human beings themselves, whose greater intelligence, whose memory and undying consciousness, whose instinctive aspirations after something beyond this "dim spot which we call earth," mark them as the noblest of God's works which we have here the power to investigate.

Amongst the least informed people, and in remote villages, there are old saws and rules regarding health, sickness, and wounds, which might be thought to come from mere experience; but they are, on the contrary, for the most part, the remains of forgotten theories and opinions, laid down by the learned of former days.

Portions of knowledge, it would appear, confined at first to a select part of society, are, in the progress of time, diffused generally, and may be recognized in the aphorisms of the poor. These are traced to their source only by the curious few, who like to read old books, and to observe how that which is originally right, becomes, through prejudice and ignorance, distorted and fantastical.

If a very little exact knowledge of the structure of our own frames were more generally diffused, charity would be advanced, empirics could hardly maintain their influence, and medical men might have a farther motive to desire professional eminence.

Men suppose that the knowledge of their own bodies must be a science locked up from them, because of the language in which it is conveyed; or they take away their thoughts from it, as from the contemplation of danger, unwilling to survey the slight ties by which they hold their lives. They are like persons for the first time at sea, who shudder to calculate how many circumstances must concur to speed the frail vessel on its voyage, and how little is between them and the deep.

It is then a mean and timid spirit that shuts out from our contemplation the finest proofs of Divine Providence. Galen's treatise on the uses of the parts of the human body, was composed as a hymn to the Creator, and abounds in demonstrations of a Supreme Cause; and when Cicero desires to prove the existence of the Deity from the order and beauty of the universe, he surveys the body of man, deeming nothing more godlike, as marking man's superiority to the brutes, than the privilege of contemplating his own condition, since it teaches him the ways of Providence, from a knowledge of which come piety and all the virtues.

It is worthy of remark, that the skeleton and muscles, (which we are about to discuss,) and the organs which fill up the cavities, are not self-existent. They are continually undergoing destruction and repair, removal and renewal. The particles which compose the whole body are for ever changing. There is also a gradual growth up to adult age, and there is at length as sure a decay. The human being is born weak and defenceless, and long continues to be protected by other beings, the object of their affectionate solicitude.

During this period, and for some time afterward, how wonderfully may we not observe the laws of nutrition and of growth exemplified. Food is taken by the child, and this food is converted into living particles; added to every tissue in the body; membrane and muscle, nerve and blood-vessel, and bone; and by this constant accretion the child grows up to youth, and to adult age.

Plants are nourished by the absorption of suitable fluids, constantly going on.

————"The various vegetative tribes,
Wrapt in a filmy net, and clad with leaves,
Draw the live æther, and imbibe the dew:
* * Disposed into congenial soils,
Stands each attractive plant, and sucks, and swells
The juicy tide — a twining mass of tubes."

Animals, intended for locomotion, cannot be nourished by roots; they must have a stomach, or reservoir, large, and capable of admitting solid food, requiring mastication and solution by liquids. Their nutrition is less simple, and their digestion more complicated. As plants draw up from the dark earth materials to be elaborated into fresh leaf, and beauteous flower, and blushing fruit; so, from the food taken into the animal stomach, are wrought tissues which compose the whole body;—the skin, the eye, the very brain—all that attracts our affections, and all that excites our wonder.

This singular conversion of food into living tissues, capable, from the principle of life, of resisting the agencies of physical nature which would decompose them, is so continued until the body has attained a certain stature, so as not only to repair, but to add to the bulk of, every portion of the body.

The new-born child is one-and-a-half foot long,—about one-fourth of the stature finally obtained; at two-years-and-a-half, one-half of the final stature is attained; and at nine or ten years, three-fourths. Then, when the adult stature is obtained, this wonderful process of growth is suspended, and that of renewal only continued. The bulk of the body, and the quantity of fat deposited in particular tissues, may yet be increased; but the stature cannot be added to by any measure of food. Yet, if a power of addition is required, if growth be wanted, it can yet be exerted. If a simple wound be made in a soft part, by a sharp cutting instrument, all that Nature requires as a condition of its cure is, that the divided edges shall be brought into close apposition; and she then agglutinates them. But if part of the substance be lost, and the divided edges cannot meet, Nature is compelled, if we may use such language, to alter her plan of cure; she begins to build up fleshy granulations from the lowest part of the wound, raises them in successive layers to the surface, and when this masonry is completed, covers in the work by a formation of new skin. So that when addition is wanted, it is made; but except in such cases, the frame is preserved for its appointed time, but not added to after adult age. After a time, whatever food is taken, the vigour of the body becomes less sustained, the tissues shrink, the various functions become (we know not why,) enfeebled; and at length the principle of life abandons the corporeal habitation to natural decomposition.

The cessation of life, familiar to us in so many examples, cannot be said to surprise us; but it shocks us. Yet its long continuance, in constant dependence on the accident of our taking food, or the mere transmutation of extraneous and vulgar substances into corporeal elements, so as to preserve the body in one form for a time, and its functions undiminished,—this seems the greatest mystery, a greater than its decay. For even the mind remains the same throughout these changes, retaining the impressions early made, and which, although not always recalled with equal readiness, are indelible until life has departed, and left the body to pass into fluids and into gases, no longer held in the forms of organized life.

Humble, then, as are the materials of the human frame — the mere dust of the earth — it is the mansion of certain functions ministering to an intelligence; and this intelligence is not merely for the direction of the movements of the body, and for inventing arts of seeking and preparing food, nor for carrying on mere barter and exchange, and acquiring dominion over certain portions of the surface of the earth, or of its precious minerals. There is a higher end. As reasonable observers, we cannot but ask, what the end is.—To breathe, to eat, to grow, to suffer pain and pleasure, to attempt much, and to perform little, to look about us for a few years, and leave designs unfinished, inquiries unsatisfied, and to find ourselves declining by insensible degrees, into all the infirmities and humiliations of age, and, after some sixty or seventy years, to die — important as it seems in the acting, is little more than a vain and empty career, in which we only acknowledge, at every step, that this body is frail, and that it is mortal.

If we breathe, therefore, if we digest, if blood flows in our arteries and veins, if we feel and move,—it is not for the low pleasures of sense, which soon pall, and finally perish; it is that opportunity may be given to us, in a life limited with a view to such especial purpose, to improve, to a certain extent, the thinking faculties and the higher instincts, which distinguish man from all animals.

We move in a grand procession, which began at man's creation, but the end of which is invisible. We take up the work of mind as others left it; we leave it for others to take up whose life is beginning; the workmen change, the work proceeds. But we believe, perhaps, that the mind has been improving — that our thoughts and feelings have been somewhat purified and raised — that the waywardness of youth, and the inexperience of early life, have been succeeded by wise, and noble, and calm aspirations; and thus, although we acknowledge the humility of this bodily frame, we do not behold its sure and silent decline without a belief that something which is within us, and by which this is felt, cannot all die. So that no change in this eventful and mysterious life is wholly desolating.

To such conclusions, which must form a strong guard against any habitual course of self-degradation, the student of Natural History must always be especially led; and if there were no other recommendation of it, surely this would be sufficient.

But the capacity of applying to such a study, and of coming to such ennobling conclusions, is the privilege of man alone. The faithful dog which follows him, the beasts which graze or ruminate, the birds and insects which pursue their food through the air, the lion which commands the forest, and the whales which multiply in the vast depths of the sea,— live and die unconscious of all except the little circle of their own wants or fears. For them the earth blooms and the stars shine in vain, unnoted and unadmired; they know nothing of the universe, they cannot raise their limited thoughts to adoration of Him who made the heavens and the earth.

It has pleased the great Creator, in whom we all live and move, to constitute us differently, to reveal something of his sublime nature to us in his works. There we read his wisdom, and there his benevolence; there his unchangeableness, and there his paternal care of all that he has created. From the same perusal, whilst we learn those facts which constitute all science, man's intellect becomes exercised, and he raises himself above an animal of prey, becomes social and enlightened, and ascends by degrees to different gradations of social and individual happiness; which already, in our imperfect science, and imperfect morals, so much raised above the happiness of the wandering savage, is destined, perhaps, even in this state of existence, by the successive advance of all knowledge in coming ages, to rise to a height, to us, immeasurable, and almost inconceivable. Still I would avoid pushing observations of this kind to extravagance. So long as man is constituted of this frame, to which we shall shortly direct your attention, must the greatest happiness and highest wisdom of which he is capable be imperfect; nay, even poor and low, compared with that purer bliss and more exalted knowledge to which his inmost instinct, and an express revelation, have taught his thoughts for ever to aspire.

LECTURE I.

PHYSICAL EDUCATION, OR BODILY TRAINING.

My object in the present course of Lectures is to demonstrate to you how the Physiology of the Brain, or Phrenology, as it has been called, is applicable to the successful training of body and mind, called — Education.

To that man who takes a pleasure in beholding the mental advancement of his species, it must be cheering beyond expression to witness the interest now bestowed, by the middle and higher classes in this country, on education. But of the many philanthropists who rejoice in these our days to mark the growing interest of the English in the subject of education, few, comparatively, appreciate the physical changes which may be produced in the human brain and body by education; and fewer still there are who can understand the manner in which these changes are wrought, through the agency of the nerves, the brain, and the blood.

I shall endeavour, therefore, to explain to you the action and re-action of these agents, which effect the changes I speak of; how far I may succeed I cannot pretend to judge, but this I do know, that it will be my constant care to make myself understood, even by the juvenile members of this assembly, and I shall try to lead your minds from the most simple facts, up to the higher propositions of my subject.

If I were to ask, What do you mean by education? by some I should be answered, "It is teaching children to read, and write, and cast accounts;" others would say, "It is training up youth to a knowledge of their duty in society;" some, still better informed, might reply, "It is teaching man his duty to his God and to his neighbour;" but even this, although comprehensive, is not the extended view I wish each of my hearers to entertain of the all-important — education.

I wish each one here present to go with me in conceiving the basis of education to be, First, The knowledge of our own body, its laws, management, and relation to the surrounding world, our present resting-place; this knowledge comprises training, or bodily education. Secondly, A knowledge of the physical properties of the globe itself and all it contains, its history and relation to surrounding worlds; which is intellectual education. And Thirdly, A knowledge of the relation we hold to the God who created us, to our fellow man, and the necessary preparation for our last abode, revealed to us by God himself, and purchased for us by the sacrifice of his Son our Saviour; this is moral education.

Education should begin, then, at our birth, continue through our life, and end only with the termination of our existence here.

In treating of education, I shall follow the natural division which my subject falls into, and consider it, First, Bodily; Secondly, Mentally, or Intellectually; Thirdly, Morally.

According to this division, we will consider physical education, or bodily training; which I stated to consist of a knowledge of our own body, its laws, management, and relation to things around us.

You will readily perceive how important this subject is to each individual, by reflecting that we are placed on this earth for a very limited period, possessing a very complicated structure, subject to certain laws, which, by our submission to, or transgression against, our period of existence is diminished or increased — rendered useful, painful, or pleasurable.

Shall I begin, then, with the body we receive at our birth? No. There is a subject of great moment claiming our primary reflection, though too delicate to be fully considered here.

Undoubtedly parents do transmit to their offspring their personal resemblances both in body and mind; if in body, the diseases as well as the perfections of the body are transmitted; if in mind, the structure of its nstrument, the brain and nerves, is handed down from parent to child. The farmer knows by experience if he continues to sow the same wheat he reaps off the same soil frequently, the seed dwindles away, and ultimately ceases to produce its like: hence, his interest dictates to him to change either the soil or the wheat. The grazier adopts the same rule in the production of his cattle; he even changes their pasture frequently, finding that a continuance of the same herbage ceases to supply health to his flock. Shall man, then, in continuing his own species by intermarriage with his relatives, violate that law in his own body, the analogy to which he cannot but discover in his crops and in the breeding of his flocks? Surely we must believe, from what we daily witness in the bad consequences of improper marriages, that the imbecility we endured in our first fall has followed man through every generation, even until now. Or, surely the power of his mind, which teaches man to scale the heavens above him, or to penetrate into the deepest abyss of earth, forsakes him in the consideration of the bodily and mental powers of his children. Is the abode of his soul, the brain — the instrument of all his actions, the body — to be passed over in indifference, whilst the creation of wealth is hourly toiled after, and the distinction which power gives is accounted a laudable pursuit? Can wealth ensure a perfect body, or power give supremacy of mind? Whilst man neglects the laws of reproduction by errors in marriage, shall we wonder that diseases augment, lunatic asylums increase, imbecility become more common, consumption prostrate nature's fairest flowers, and scrofula maim her most intellectual scions?

I might long dwell upon this theme, but I hope I have by these few hints aroused reflections as practicable as they are important. I proceed to the body our parents have thought proper to bequeath us, or perhaps have never thought of at all.

SKELETON.—Of the skeleton or hard frame work of our body, I shall, on this occasion, only advert to some particular points, which I am desirous you should weave into the present subject, namely, the education or training of the body.

The chief components of the human bones are lime and glue—the glue predominates in youth, and lime in old age—and both these are derived from the blood.

Now, before we go on, let me ask you to remember this proposition—nature gives superiority of form to the bones, strength and power to the limbs of her animals, only in proportion as they demand them of her by the due exercise of the body; and this rule you will find applicable to every power we possess.

Education, I stated, begins with our birth; so almost immediately after we are born begins the necessity for the exercise of our bones. By moving and turning our infants, the joints, the ligaments, and the muscles are exercised and educated; the blood circulated, the stomach stimulated to better digestion, and the bones strengthened and enlarged. But supposing the opposite course be pursued, or exercise neglected, what will be the result? A diminished secretion of bony material, as we see in the softening and destruction of the bones; in many cases they indeed become so soft, that you may bend them as you please, or cut them with a knife; in short, you have rickets and softening of the bones come on, and this prevails especially in the tender frames of girls, evidenced by crooked and gibbous spines and ancles. I have witnessed several cases of *molities ossium*, as it is technically called, or softening of the bones, in which you might bend them to any form you please. I remember one boy, of twelve or thirteen years old, whose bones were so soft that I bent the hand to the elbow, and again straightened it; he was hideously disfigured, and the best idea I can give you of him is by supposing that you had moulded the image of a child in clay, and then crushed it with your hand, so distorted was he. These facts will, I hope, leave on your minds a conviction, that exercise in infancy is essential to the growth and perfect form of children's bones. Of the necessity of the addition of pure air, and attention to proper diet, I shall speak in their respective places.

Bad effects of teaching children to walk when too young.

Some fond parents, disregarding the fact, that the bones are comparatively soft and pliable in infancy, and in their haste to see the little objects walk without support, are continually soliciting attempts at standing or walking, long before the bones have acquired sufficient power of resistance, and the muscles sufficient power of contraction, to cope with the laws of gravitation. The natural consequence is a curvature of the bone, which yields just like an elastic stick bending under a weight. The two ends approach nearer to each other than they ought to do; and, to accommodate themselves to the change, the muscles become shorter on one side, and perhaps longer on the other, each losing part of its efficiency in the unnatural change it undergoes.

From this view it will be seen how hurtful leading strings must be. In the first place, by their mechanical force, they compress the chest, and impede respiration; and, in the second, by preventing the body from falling to the ground, or rather by preserving an upright position, they cause more of the weight to fall upon the bones of the spine and the lower extremities than these parts are fitted to carry. From this noxious practice, flatness of the chest, confined lungs, distorted spine, and deformed legs too often originate.

When the body arrives at maturity, the bones acquire their full power, and are not so liable to break; but as we advance in years, the frame becomes more rigid, and by the glue being withheld, and the lime then predominating, the bones are very liable to be broken; hence the necessity to caution old persons in taking extraordinary exertion in advanced life. The use of dumb-bells, which would be salutary in youth, would be dangerous in age. How frequently do we hear of the most trifling jerk breaking the limbs of elderly persons, and especially of females!

MUSCULAR SYSTEM.—If, ladies and gentlemen, you are convinced, from the evidence I have brought before you, that it is necessary for the growth and power of the bones that we exercise our children, as one step in their bodily education, how much more important will you deem the exercise of the muscular system to be, when you have considered its anatomy. I shall endeavour, as clearly as I can, to make you conversant with the nature of muscles. It is not in my power to show you the human muscles in their natural state; I must therefore be as explicit as possible in a verbal description of them.

The muscles, then, are the red fleshy parts of our bodies, which cover and move our bones, and give that irregular outline to man's figure, distinguishing him from woman; for in woman the muscles are not so large or prominent, and are nicely cased over with a layer of delicately soft adipose tissue, filling up the interstices between their volumes, and making their limbs so round, and so pre-eminently beautiful. If you remove the skin off the limb of an animal, you will arrive at the fat and muscles. The last are generally oblong fleshy bundles, attached to the heads of the bones, and directed towards their extremities, which they are destined to move. They are in some places found layer upon layer, where complex motion is required; and they generally terminate in a sinew or tendon; and, by possessing the power of swelling in the middle, according to the mandate of the will, they shorten themselves like worms, and bring their two extremities nearer to each other, and consequently approach the bones to which they are attached. Their contraction or control by the will is thus effected. They are composed of bundles of longitudinal fibres; at intervals, branches of voluntary and sensitive nerves enter those fibres; and at each point of entrance, when motion is required, a zigzag contraction takes place. They are also greatly supplied with blood by their own arteries to nourish them, and veins to return the blood. There are in each of us about 512 muscles, 254 of which are in pairs, and are required to work 240 bones. In dancing, singing, and playing at the same time, 300 muscles are called into action. And now for the uses, abuses, and education of the muscles.

The heart is the most important muscle in our body; being hollow, the blood flows in — the muscular bag contracts, and throws it out again, into tubes attached to holes in the heart; and thus our arteries are filled and our veins emptied, forming what is called the circulation of the blood. The movement of every part of the body is dependent on the muscular contrivances being adapted to the desired end; and for the sake of making my subject perfectly intelligible, I will now present to your notice the groundwork of my theme this evening. First. The skeleton is the frame work. Secondly. The muscles are the levers to move it. Thirdly. The nerves are the communicators or workmen which stir the muscles. And, lastly. The brain is the architect, which directs the workmen to obey its dictates. Now supposing the brain to have spirits, or other strong drink, poured into it with its blood, will it not follow that the muscles must be misdirected, as we see them in the gait of the drunkard — as we hear them in his faultering speech? And if this stimulus be often applied, will not the brain and the nerves be liable to be weakened, and palsy and madness follow? The answer is readily supplied.

Fortunately for us, our beneficent Creator has added to this arrangement of voluntary power another set of nerves and muscles, called involuntary — such as those employed in the action of the heart, which continues to beat during sleep, drunkenness, or wakefulness; the stomach and bowels, which digest for us during sleep; and the lungs, which maintain their movement independently of the repose of the rest of our body.

It has been well observed, that we cannot be sufficiently grateful that all our vital motions are involuntary, and independent of our care. We should have enough to do, had we to keep our hearts beating and our stomachs at work. Did these things depend, not to say upon our effort, but even upon our bidding, upon our care and attention, they would leave us leisure for nothing else. Constantly must we have been upon the watch, and constantly in fear; night and day our thoughts must have been devoted to this one object; for the cessation of the action, even for a few seconds, would be fatal: such a constitution would have been incompatible with repose.

The wisdom of the Creator is in nothing seen more gloriously than in the heart. And how well does it perform its office! An anatomist who understood its structure might say beforehand, that it would play; but from the complexity of its mechanism, and the delicacy of many of its parts, he must be apprehensive that it would always be liable to derangement, and that it would soon work itself out. Yet does this wonderful machine go on night and day, for eighty years together, at the rate of 100,000 strokes every twenty-four hours, having at every stroke a great resistance to overcome; and it continues this action for this length of time without disorder, and without weariness. That it should continue this action for this length of time without disorder, is wonderful; that it should be capable of continuing it without weariness, is still more astonishing. Never, for a single moment, night or day, does it intermit its labour, neither through our waking nor our sleeping hours. On it goes, without intermission, at the rate of 100,000 strokes every twenty-four hours, yet it never feels fatigue—it never seems exhausted. Rest would have been incompatible with its functions. While it slept, the whole machinery must have stopped, and the animal inevitably perish. It was necessary that it should be made capable of working for ever, without the cessation of a moment—without the least degree of weariness. It is so made, and the power of the Creator in so constructing it can in nothing be exceeded, but his wisdom.

MEDULLA SPINALIS. SPINAL MARROW, OR SPINAL CORD.—The front half is destined to execute motion, and the back half to convey feeling to the brain. Tracing, then, the front part of the spine into the brain, we find it becomes connected with the front, or intellectual parts of the head, where, it would appear, the will resides; and tracing the back part of the spinal cord upwards, it becomes connected with the back part of the head, where, it is said, the feelings reside. Hence, if I give pain to my arm, the intelligence of the fact travels up the back part of the spine to the brain, and, consciousness of injury being aroused, the will sends down the front part of the spine a command to have the arm removed from the source of pain and injury. This you know is an every day act, though the phenomena of its performance is unheeded; so by this example of analysing our powers of motion and sensation, you see how wonderful our faculties are, and how much of consummate skill unfolds itself, when we take the trouble to examine the mechanism of our body, and its uses. When we listen to the delightful modifications of his voice in the accomplished singer, we little know how perfectly he must have educated the muscles of the throat and chest. It is calculated that the seven pairs of muscles connected with the voice can produce 16,000 combinations, but with the fifteen other auxiliary muscles employed in perfecting sound, millions of combinations may be effected: nor is this strange, when you reflect that a difference of the 345th part of a hair's breadth in the glottis will make the change between a true and false note. These facts should suggest to the vocalist the danger of paralysing any of these delicate fibres, by frequent inebriation, smoking, snuff-taking, or any inordinate or unnatural stimulant.

The explanation I have given to you, just now, of the two-fold action of the nerves, namely, their sensitive and moving powers, will afford you a correct explanation of a phenomenon you may have witnessed in a paralysed limb; that is, feeling remaining, whilst motion is lost; some injury has been done, in this case, to the front connexion of the spine and brain; and to the back part of the spine and brain, when motion remains and feeling is lost.

To prove to you that my assertion is correct, if you supply the defect of the will's mandate by the application of electricity, you will find the previously paralysed limb move in convulsive jerks. It is by the influence, then, of the brain, in equally diffusing its power to each muscle, that the mind commands the body. Hence arises the graceful perfection of the dancer, the fencer, the actor, and the address of the juggler, as well as the all excelling art of the painter, engraver, and sculptor; in short, it is the high education of the muscles, by the influence of the will, which lifts man to the pinnacle of perfection in almost every art.

By this time you will perceive why I have glanced at the muscular and nervous system, for without this necessary link in your minds, you would not have felt the application of these facts to the education and training of the body, preparatory to the education or training of the mind; which latter, you will perceive in the sequel to be far more dependent on the bodily health than is generally believed. The Spartans, and other Greeks, the Romans, and early Germans, were fully acquainted with the effects of the education of both body and mind; and to create fine races of each of these people, public gymnasia were instituted, purposely for the training of youth. Indeed, the name Gymnasium was first employed by the Spartans, and signified a public building wherein youth exercised themselves in leaping, running, throwing the disk and the spear, wrestling, and pugilism. But, I should observe, as civilization progressed, the Spartan gymnasium was soon enlarged in its signification by the Greeks and Romans, who did not confine its objects merely to corporeal exercises; but to the grand gymnastic amphitheatre they added wings, which contained buildings appropriated to the exercise of the faculties of the mind. Here philosophers, rhetoricians, historians, and teachers of various branches of knowledge, delivered their lectures. Most of the cities of Greece and

Rome had their gymnasia. In Athens alone there were no less than five, in which Plato, Aristotle, Antisthenes, and other philosophers taught.

Do we wonder, then, that the arts and sciences flourished under such auspices, where every aid was afforded to elevate and raise the mind of youth? Or do we wonder, when luxury enervated the young, and rendered more impotent the old, that Greece should sink, and Rome become a moral desert. With the introduction of the thermœ, or warm baths, of the Cæsars, the gymnasia may be said to have expired. It is to be regretted that we are not well informed by history of the exact steps taken by the Greeks in training their athletæ; but we can imagine how the sense of the beautiful, so peculiar to the Greeks, must have been gratified in the gymnasia at Athens, by the exhibition of the finest forms that the human figure has ever attained. Some late writers on modern Greece imagine they can yet trace the remains of the Olympic games amongst the present race of Greeks. Byron's lament over fallen Greece contains an allusion to the Pyrrhic dance:—

> "You have the Pyrrhic dance as yet—
> Where is the Pyrrhic phalanx gone?
> Of two such lessons, why forget
> The nobler and the manlier one?
> You have the letters Cadmus gave,
> Think you he meant them for a slave?"

It is to be lamented that the gymnasia degenerated with the people of Greece and Rome into mere brutal entertainments, like our bull-baiting, and similar exhibitions, calculated only to call forth the lowest feelings of our fallen nature. Of late years there have been several attempts made to establish a system of gymnastics in this country. In 1811 the German youth were trained by professor Jahn, in a patriotic spirit, to prepare them for a defence against the invading French. In 1824 professor Voelker brought Jahn's system into this country; and, about the same time, a captain Clias established a gymnasium at Chelsea. But, alas! these wholesome efforts at bodily education have dwindled into a mere system of calisthenics for ladies.

It will be my endeavour now to show you that exercise is essential to the growth and perfection of the body; that by apportioning it to the strength of the individual, and practising it according to a rational system, it becomes a pleasure as well as a duty; and that the edict of our merciful Creator, in the third chapter of Genesis, "In the sweat of thy brow shalt thou eat bread," instead of a curse, may prove a blessing to man. In the early part of the lecture, I shewed you that the consequences of not exercising the infant were rickets and softening of the bones, and that due exercise perfected the body. Now, by reflecting what takes place in every command of the mind for the movement of a limb, you will admit the truth of this conclusion. Thus the nerve stimulates the fibres of the muscles—the muscles pull the bones; hence the bones are moulded, whilst soft, to the action of the muscles; and the muscles are brought into a more ready submission to the mandate of the mind through the nerves; and again, the nerves, by their frequent use, demand more blood, which is essential to their life, and thus the blood-vessels become enlarged. You see, then, by these beautiful contrivances, how one action consents to another—modifying, and being modified, according to the immutable laws of creative wisdom.

I shall now speak of the blood-vessels, and some of their laws, which will lead me to the blood, its composition, and modifications, according to the quality of the food, air, exercise, and electrical phenomena. The blood-vessels consist of arteries and veins. The arteries, commencing at the heart, run over the whole body, and, after dividing and subdividing themselves into tubes, much finer than the finest hair, terminate in veins, which, exactly contrary to arteries, become larger and larger, till they again arrive at the heart, thus completing the circle; in doing which, you will bear in mind, every part of the body has received new blood, to supply the waste consequent on the operations of life; and this waste blood is sent to the lungs, there to throw off certain noxious qualities it has acquired in the surrounding air. Hence the impropriety of living in crowded rooms. There are some surprising phenomena connected with the structure and uses of blood-vessels, which you should be made acquainted with, and they are best mentioned here.

The heart, you know, is the engine by which the blood is propelled. It has been stated to be a hollow, muscular bag; it contracts about 60 times in a minute, 4,000 times in an hour, 100,000 times a day. Each cavity of the heart may contain from two to three ounces of blood; therefore, as the heart contracts 4,000 times in one hour, there passes through the heart, every hour, 8,000 ounces, or 700 pounds of blood. The whole mass of blood in adult man is about 25 or 30 pounds; so that a quantity of blood equal to the whole mass passes through the heart twenty-eight times in an hour, which is about once every two minutes.

What an affair must this be in very large animals! It has been said, and with truth, that the aorta of a whale is larger in the bore than the main pipe of the water-works at London Bridge, and that the water roaring in its passage through the pipe is inferior in impetus and velocity to the blood gushing from a whale's heart.

Dr. Hunter, in his account of the dissection of a whale, states, that the aorta measured a foot in diameter, and that ten or fifteen gallons of blood are thrown out of the heart at a stroke, with an immense velocity, through a tube of a foot diameter.

The blood is the stimulus which, by its presence in the cavities of the heart, excites the heart to its proper action. Now, in proportion as the muscles of the body move, so do they require more blood to maintain their energy; and, by a very simple law, the more they move, the more do they, by pressing on the vessels within and surrounding themselves, accelerate the flow of the blood towards the heart.

I can make this even more clear to you, by the familiar illustration of the phenomena observed in walking up stairs. In walking up stairs, what are the phenomena you observe in your own bodies? 1st. That it requires more effort in your muscles. Why? Because you have to sustain and raise the body by its muscles, and against its own gravity. 2ndly. It is attended by difficulty of breathing. Why? Because the increased muscular effort fills the larger veins—the veins pour their blood into the right cavities of the heart; these cavities are thereby stimulated to greater exertion; the blood is quickly injected by the right side of the heart into the lungs; these, being filled unusually, and unusually stimulated, endeavour to increase the power of changing the blood, from venous to arterial, faster than usual; hence the increased or difficult breathing. 3dly. You remark that the heart beats faster. Why? Because the lungs send their blood to the left side of the heart faster than usual; hence the left side of the heart tries to get rid of the blood faster, and there is a consentaneous increased action of both sides of the heart and lungs established. Therefore a quicker pulse. Is there any other reason for the heart beating faster? Yes; because more blood is necessary to supply the muscles with stimulus during their increased labour, necessary in going up hill. 4thly. We noticed an increased action of the skin; perspiration appears, if the exercise of going up hill is continued. Why do we need perspiration on increased exertion of the body? To throw off the salts of the blood, and to render it thereby less stimulating to life, so as to put a period to exertion which, continued beyond a certain time, would lead to a cessation of life itself, from injury to the elasticity of the vessels, and exhaustion of the nerves which convey the will to the muscles.

I have now introduced a new phenomenon to your minds, in this explanation—namely, the stimulus of the heart's action by the salts of the blood; and if I do not here explain this fact, I shall lead you into confusion, by outrunning my subject.

I will briefly state to you some experiments of Dr. Stephens, performed in Worcester; a circumstance which, in years to come, may, I hope, tell advantageously to my native city. Dr. Stephens is a Scotchman, a minute observer and close reasoner; the Duke of Wellington was pleased to confer on him, at Oxford, his degree, from a recollection of his valuable services in India, when attached to the Army Medical Staff. Dr. Stephens saw a butcher killing a pig, and observed that he stirred the blood of the animal, and added a handful of common salt to it whilst stirring, which immediately made it crimson, and on the stirring being discontinued, the blood remained fluid. The change of colour of the blood, by means of the salt, awakened his curiosity. The butcher could give him no explanation of the phenomenon, except that, "it kept it from jellying and spoiling." Dr Stephens himself then made experiments with salt in blood, and found that the blackest blood was rendered instantly vermillion by salt. "Oh!" said he, "here is a fact which may lead to a practical rule!" He had noticed in yellow fever in the army, that the blood drawn was always very fluid and black, and on adding salt, it became vermillion, and retained its freshness; whereas putridity of the blood is one of the characteristics of yellow fever. He then abandoned the usual mode of treating yellow fever, and gave his patients a mixture of various salts, and found very soon the superior advantages of this plan in their cure. In a very short time, he reduced the mortality of fever in the West Indies, from one in five to one in fifty. What do you think accrued to him from this discovery—that he was rewarded and honoured accordingly, and especially so by his medical brethren? No such thing—his success became too notorious—jealousy nipt his fair fame in the bud, and detraction, like a mean cur, pursued, and retarded for a time, his steps to distinction. 1st. His conclusions were challenged by his paltry competitors; 2ndly. The discovery was "an old plan;" and lastly, it was considered a new and very doubtful remedy!!

It is pleasing to see how master minds have wrought the most gigantic discoveries, from observing the most trifling facts. Newton discovered, in the fall of an apple, all those beautiful laws connected with gravitation of falling bodies towards the earth. The laws of specific gravity were found out by weighing the Crown in water; gas-light, by the burning a dirty tobacco-pipe; the steam-engine, by boiling water lifting the lid of a tea-kettle; the composition of the diamond, by its refraction. But, to return to Dr. Stephens: if he did not receive the honours due to his discovery in his own country, through the malevolence and petty jealousy of little minds, Russia, Sweden, France, Spain, and other kingdoms rewarded him by the most honourable notice, and distinguished his discovery by every mark of approbation.

Returning, however, to the nature of the discovery, and its application. Salt stimulates the heart to action, preserves the sweetness of the blood, renders its circulation more easy, and changes its blackness into a crimson fluid, making it all but arterial. I can imagine that by this time some of you may begin to ask, What can the blood have to do with education? I will pause here, and tell you.

In the first place, the health of the body is essential to the vigorous action of the mind: the more perfect the health of the body, the longer can you sustain the operations of the brain or mind. The body is built up from the blood—from the blood it derives all the materials of which the body is composed; the health of the body is disarranged by diseased blood, and often reinstated by restoring this fluid to its healthy composition. Lastly, the blood is made from the food, and therefore a knowledge of the mode of feeding the body is essential to forming pure blood, and consequently essential to a continuance of health. By ensuring, as far as lies in our power, a continuation of health, our period of usefulness here, as well as the gratification of mental exercise, is greatly augmented; for if you abstract the long incapacity of infancy and of second childhood, the necessary time for relaxation, sleep, and feeding, with the period of sickness, you will find, that the net time of mental enjoyment and usefulness in this life is reduced to but a very, very few years.

I shall return to the composition of the blood, and weave in many incidental topics, all tending to the same end, namely, a knowledge of the human machinery, the natural means for moulding it to our purpose, and keeping it going as long as we can. After blood has been taken from the system of an animal, and allowed to coagulate, you will perceive a clear fluid at the top, a reddish, apparently solid substance in the bottom, and also covered at the top with a whitish coat of tenacious material. These are the apparent physical properties of the blood. The clot, on being examined by the microscope, is seen to be made up of globules of about the thirty-six-thousandth part of an inch in diameter, and of course the vessels these globules have to permeate must be still smaller. If this surprises you, what will you think when I tell you, that chemistry has discovered twenty-six different substances in the blood, namely, in the clot—globules, albumen, fibrine, hematosine, and iron; in the serum—water, yellow colouring matter, free oxygen, nitrogen, carbonic acid, extractive, phosphuretted fat, cholesterine seroline, free oxalic acid, margaric acid, hydrochlorate of potass, hydrochlorate of soda, hydrochlorate of ammonia, sulphate of potass, carbonate of soda, carbonate of lime, carbonate of magnesia, lactate of soda, fatty acid, salt; besides a peculiar gas which is given off as it cools, and other substances not yet clearly made out.

This is a frightful list for the memory, but let me set your mind at rest by saying, that out of the twenty-six hard names, I shall only burthen you with seven, namely, the water or serum, red globules, albumen, fibrine, oxygen, and carbonic acid. We shall only stop to examine a few of these. 1st. The fibrine. This substance is especially necessary to the composition and renovation of the muscles, skin, and vessels. Whilst the blood remains fluid, this substance is fluid also; but becomes solidified on being taken from its vessels; and, strange to say, if you remove the thick material from the blood, the blood will no longer penetrate the finer vessels, but becomes effused into the surrounding tissues. An absence of the fibrine, as we see, constitutes some of the diseases of the body; in sailors, after a long voyage, scurvy; in the poor, gangrene, when bad wheat, rye, or potatoes are eaten; and in the sequel of several diseases, when the fibrine has, from the extreme prostration of the body, ceased to be formed by the powers of digestion of the food. The familiar disease, the "purples," is owing to this state of the blood. It will serve to refresh your memories of the facts I related to you in speaking of the capillary vessels—those which join the arteries to the veins, if I mention to you what occurs in injecting these vessels. We know, by the return of the venous blood by the veins, that the heart must have driven the arterial blood through the capillaries, into these veins. Now, supposing we wish to imitate the heart's action, and take a syringe with water in, and attempt to pass the water from the arteries into the veins, do you think we shall succeed? No, very rarely; because the water is too thin a fluid: we add albumen, white of egg, or glue, to the water, and then we succeed perfectly.

What is the explanation of this paradoxical fact? The following:—The water being too subtle, makes its way through the sides of the vessels, instead of their cavities; whereas the vessels bear the water containing glue or albumen, without letting it through their sides, and the circle of circulation is thus completed. Dropsy, in the sequel of life, often springs from this source.

By this time you will perceive the importance of a knowledge of the human body to every individual who desires to maintain health, or to extend life. You will by this time also perceive how important a part in the animal economy the blood plays; and how highly important it is to form it of proper materials. The practice of medicine is yet, in consequence of a lamentable deficiency in this knowledge, but in its infancy. Many of the most important diseases, to which the body is subject, have no certain remedies. Hydrophobia, consumption, scrofula, cancer, madness, and many others, belong to the long list of incurables. How shall we expect to discover remedies for them till the state of the blood, and other phenomena accompanying these diseases, are understood? How many of our neighbours are martyrs to gout, without obtaining much assistance from medicine? A glass of whiskey or ale, or even an apple, will bring on an attack of the gout in some persons prone to this disease. What is the state of the blood produced by these liquors? Acidity; and if you analyse the serum of the blood in gout, you will find it acidulous. It may be, that this acid coagulating the fibrine in the capillary vessels, brings on all the pain of stagnant circulation; at least, if you give alkalies, you render the blood more fluid, less acid, and thus relieve the attack. It is true this is but a suggestion of my own, by which I endeavour to account for the relief obtained by this means. I believe that consumption and scrofula will sooner or later be found to commence in the chyle, or new blood, resulting from improperly digested food.

Having detained you some time on this important topic, I shall now proceed to treat of the formation of the blood by digestion, and as a knowledge of the blood will tend to guide you in the exercise of the body, so a knowledge of the formation of chyle will form the best groundwork whereon to build the subject of diet. In the course of this evening, I have more than once observed that the blood supplies the body with the necessary elements that enter into its composition. The vessels of the bones, form bone from blood; the vessels of the muscles, form muscle from blood; the vessels of the nerves, nervous matter; even the vessels of the vessels are derived from this material. Of the glands, their material; of the skin, its material; and the blood itself is derived from the chyle, which is formed from the process of digestion in the stomach and bowels. The chyle, absorbed by its proper vessels from the digested food, is mixed with the venous blood beneath the left collar bone; is sent to the lungs; by exposure to the atmospheric air in the lungs, it is changed into blood. You now see we have returned to our starting post—the blood again.

And now we must consider how we can best form this chyle, and from what substances we should draw it at the different periods of life, for every period requires a different nourishment. This leads us, then, to the important topic of food—another link in the chain of education; and parents, to whom I now address myself, will, I am sure, duly weigh all I have to offer on this head.

The God of nature—all-wise, grand in design, and wonderful in the execution of his will—has provided the helpless offspring of man an appropriate food, adapted to its early wants, and, in the mercy of this gift, has sweetened the labour of obtaining it by an enjoyment known only to those who have witnessed the happy expression of the infant at its time of nursing. Nor has the Great Contriver forgotten to sweeten also to the mother her toils, as her countenance shows; and lest she might, from ignorance, offer to her offspring a wrong diet, the food she delights to give contains all the elements of bone, nerves, vessels, muscles, &c. Despicable, then, must be that mother whom fashion sways to entrust her babe to a hireling's bosom, or, what is worse, to hand-feeding; nor is the punishment that awaits her dereliction of this, her first duty, more severe than the crime deserves. It is worthy a passing remark, how well the body of the infant is nourished and increased on this apparently poor food; but we must remember, that its powers of digestion are at that time calculated to turn all it receives to account. After this mode of life, we must then consider the next step, and in doing this we must pass in review the chemical elements the mother's food supplies; and from this consideration, adapt the next food to the wants of our children.

The mother's milk consists of water, curd, cream, sugar; it contains several salts, and also contains all the elements of animal life, and these consist of carbon, oxygen, hydrogen, and nitrogen—the primitive or ultimate elements of all animal bodies. More beautifully delicate, then, than any thing I can by language paint to you, is the interior of the infant's stomach—even its own and natural food is often rejected as being too rich; fancy, then, the serious mischief often done by an improper diet in the mother at this time, or the monstrous mischief of mothers cramming a portion of all they eat down the throats of their helpless babes. In the lower classes, of gin and ale they are even made partakers!!

Is it to be wondered at that, at the inflammatory period of teething, the brain should suffer, convulsions come on from irritation in the brain, skin diseases, most intractable and loathsome, should be set up by nature to convey off the injurious humours? I fear that to many here this may seem like a departure from my proposed subject—"education;" but as I am desirous to treat as perfectly as I consistently can this important subject, and as I am convinced education should begin at birth, I have ventured to make these remarks to you as a branch of the education, or leading forth, as the word implies, of the human body. The physician's skill is never better employed than when he is called to advise on the food and management of the juvenile offspring. No two constitutions in the same family are alike—no one aliment can suffice; no two dispositions of the mind are the same—no one mental cultivation is equally well adapted to both. In reviewing what I have had the pleasure to advance to you, this evening, you will observe that I stated, that in neglecting the natural laws in our succession, many of the diseases to which we are subject, both of body and mind, take their root; till what is now too apparent must become more so, namely, that out of every twenty persons, two perfectly healthy individuals shall not be found.

I exemplified, by a brief explanation of the bones and muscles, some of the advantages of education in developing the body, as well as pointed out the evil consequences arising from a want of exercise.

I shewed you that in the infancy of all nations that became great of old, gymnasia, for the perfection of bodily proportion, were made objects of public consideration. In the decline of nations, I shewed you also, that luxury, like a wily fiend, crept in, betraying their boasted citadel—their panoply of riches, to the merciless barbarian. You will, I know, not forget the importance of making the blood you circulate from suitable materials. The application of the chemical analysis of the blood to the improvement of medicine, you will admit; nor will any mother who hears me this evening, and who desires her offspring to be healthy, fail to profit by the remarks on early feeding.

We will proceed to discuss the remaining topics of physical education at our next meeting—namely, food, air, water, climate, heat, state of the skin, walking, ventilation, action of the lungs, and other incidental subjects; and to these points, I especially invite the attention of young parents, or those who have the care of young children.

To those who may view this as a dry subject, I may observe,—that as my avowed object is to disseminate useful as well as scientific knowledge, I must occasionally treat subjects heavy to myself, and uninviting to others; nevertheless, if I cannot be brilliant or animating, I must try to be useful.

LECTURE II.

PHYSICAL EDUCATION, OR BODILY TRAINING—
CONTINUED.

Ladies and Gentlemen,

At our last meeting, the subject of Education was treated in relation to the structure of the human body, and for this reason, that by a knowledge of the several parts of our body, their laws and relations to each other, and their connexion with the mind and its operations, we shall probably arrive at the best method of exalting and regulating the operations of the intellect, so as to bring forth its highest powers, direct their operations for the longest period of time, with the least injury to themselves, or to the body of which they necessarily form a part.

Now, if one of you happened to be the master of a vessel, and wished her to be conducted to the West Indies for merchandise, you would naturally seek for a captain who was acquainted with the construction of your vessel, with the navigation of the seas she had to traverse, the winds she had to encounter, the probable duration of her voyage, and the necessary provisions for her crew; and having found such a captain, you would rest satisfied that she should arrive in safety at her destined port. In launching your children on the world's wide ocean, then, should you not seek that pilot or that conductor, who, guided by his knowledge of their structure, the elements that surround them, the mind which is to be their helm, would be best prepared to steer them to the haven where you know they will be at rest?

The office of an instructor of youth is at once the most important—the most responsible by its duties, of any of the obligations we perform towards each other. It is one, therefore, requiring powers of the highest order—a knowledge of the most comprehensive and deepest kind; but, unfortunately, this office is frequently undertaken by those least adapted by their own education to perform its duties thoroughly. A knowledge of languages alone, is often the sole claim to the title of instructor of youth. Is it to be wondered at, then, that children frequently spend time irrecoverable, with but little advantage, acquiring a ruined constitution, and bad habits indelibly fixed? The instructors of youth should be themselves instructed on the amplest scale. Anatomy, to a certain extent, and Physiology, should be among the indispensable requisites for the practice of their art. They should each undergo an examination as to their qualifications; nor should they be allowed to exercise their profession without a chartered degree. This would indeed be "National Education."

Nor can we hope that British youth will be trained, both in body and mind, to the utmost pitch of perfection, till some such step is taken to produce uniformity of design in the most competent of instructors. Our Government has, with regard to the army and navy, long done this. The French, and other nations, have also acted on this plan, and rich indeed has been the harvest they have reaped for their states by these establishments. In the exercise of my own profession, the Legislature has imposed a certain course of studies on its members; an examination then ensues, which ensures to the public competent and judicious aid; and, but for the licence Government grants, for the consideration of a few paltry thousands per annum, to the cupidity of quacks, our system of medical policy would be tolerably good. If, then, by the judicious interference of the Legislature, national education could be placed on a safe basis, is it not the duty of every parent having children to be instructed — every philanthrapist who wishes well to his fellow man — every Protestant who would uphold his church — every patriot who glories in the supremacy of British intellect, to lose no time in urging this great measure on the notice of our assembled rulers. I have dwelt long, though I hope not too long, commensurate with the importance of the subject, on these preliminaries.

I must now prepare you for going with me over perhaps rather a heavy soil; but I trust we shall find it fruitful, if not very susceptible of ornamental culture.

In my last Lecture, I made you as much acquainted with the skeleton as was necessary to prepare you for a short account of the muscles, their formation, and uses; I explained to you how gymnastic exercises perfected the growth and health of man; and how idleness and luxury enervated all that was manly and noble. I explained to you how the mind, operating through the nerves, gave energy to the whole frame. I also explained to you that the blood "is the life," which, indeed, you read in Genesis — "But flesh, with the life thereof, which is the blood, thou shalt not eat." I gave you some account of the blood-vessels, and mentioned some of Dr. Stephens's wonderful experiments in the city of Worcester. I also shewed you the necessity of forming the blood from proper materials of food and drink; — with this subject I continue to-night, and then, having disposed of the internal agents bearing on health, I shall treat of such agents as act externally on our bodies; such are — climate, heat, cold, water, air, exhalation, electricity. You will remember that, in dividing the subject of education into bodily and mental, I stated that bodily education comprised a knowledge of our bodies, its laws, management, and relation to the earth we live on; this I called training, or physical education, and this has, as you will find in the sequel, more to do with mental perfection than is generally imagined.

Hunger and thirst are wants occasionally known to all of us, and in order to give a further interest to us to replenish our continually wasting frames, it has pleased the Great Author of our being to permit a gratification to accompany the taking of food and drink. The lower creatures, as well as ourselves, also feel this, but not being endowed with our share of intelligence, and moving in a smaller circle, their pleasure in replenishing their continual waste is accompanied by an instinct, as it is called, which directs them to the only food proper for each kind of creature; and it is very well worth notice that the lower animals, in a state of nature, do not commit errors in food, either in quality or quantity; and what is their remedy in sickness? Abstinence. But man, whose presumption and curiosity are never idle, has, by all the arts of cookery, sought to turn that simple gratification of restoring the famished body into a luxury, and then by pampering the appetite and breaking through all the natural laws of the stomach, the confused instinct and enfeebled digestion lead their victim into all the errors familiar to the gourmand. Digestion being weakened, the chyle is badly prepared; the chyle being badly prepared, the blood is made impure; hence the body, which you know is built up of the blood, is imperfectly nourished, the secretions are all bad, and, in short, the whole animal machinery soon goes wrong. It follows, then, that with an unhealthy body, the brain, which is a part of it, participates, and the mind is excited, enfeebled, irritated, rendered capricious, and less under the control of the will. So that this sketch of the effects of feeding improperly is not too highly drawn, as some who hear me may be enabled to testify. It follows, then, that a knowledge of the laws of digestion, including their rewards when observed, and punishment when disobeyed, may have considerable effect in guarding us against interrupted health, diminished life and pleasure, and may be a useful guide to us in educating ourselves and children, and especially in teaching the latter to conform early to reason; thus enabling them to establish and maintain self-control, and consequently to defend themselves from excess, and its multiform consequences; teaching them also to bear in mind, that temperance is the hand-maid of virtue. In the economy of the lower animals, and also in man, when in his pristine state, he was nearer allied to them in the simplicity of his life, Nature provided that exercise should excite hunger, and promote digestion; so the search for food gave keenness to the faculties, bodily and mental, and in man made labour a pleasure. The chase of wild animals amused and strengthened him; but in civic life, where the occupations of man are chiefly mental, and hunting is unnecessary in obtaining food (though useful in obtaining digestion), diseases have crept in, unknown in rural life, and are propagated from one generation to another, till at length it is a rarity to find a human being entirely devoid of disease, or of some mal-formation.

Part of the Brain regulating Hunger.

In assigning to various parts of the brain the several faculties of intelligence, phrenologists have, they conceive, discovered a part which governs our appetite for food and drink, and this part is situated just above the joint of the lower jaw in man; and their experience, from accumulated facts, seems to warrant the truth of their conclusions. There is one fact, which has either been overlooked by them or I am mistaken, which materially supports their view. It is this—the nerve of smell, when it leaves the nostrils, passes by a conjoined cord, composed of three parts, into the brain, in order to communicate its impressions to the mind, and one of these divisions separates itself from the rest, and is distributed to the convolutions of brain forming this organ of alimentiveness. It is a fact worth remarking, that the other portions of this nerve are connected with the striated body, as it is called, near the front of the brain, with the fibres of several of the perceptive lobes of the brain in man, and with the lateral and lower faculties, such as are known to be excited by smell. Thus, to support the validity of the phrenological division, it may be said, that anatomy is in harmony with the peculiar physiology of the brain advanced by phrenologists, inasmuch as they find that, according to their system, the olfactory nerve is only connected with the lower faculties, which, *à priori*, would be just those faculties which we would expect to be excited by smell; and that those several convolutions given to benevolence, veneration, firmness, hope, conscientiousness, pride, and some others, are unlikely to be connected with smell. You will at once perceive how ridiculous it would be to say, that a man's charity was called into play by his nose—his conscientiousness by his smell—his hope by smell. I mention this to show you an anatomical argument in favour of phrenology—a science to which many claim the right of appending the title of nonsense, without having examined its pretensions to truth; but it must be acknowledged, that to reject it as nonsense is much easier done than to investigate the foundation of its claim to truth; hence, the opponents of the doctrine will be found chiefly amongst the ignorant, the cunning, the prejudiced, and the dogmatic.

In order to follow out my plan of calling the training of the body a branch of education, I should now state the principles on which I would manage the stomach, by a proper knowledge of food.

FOOD.—But, what is the proper food of man? Here is a question full of difficulties; many of them will, however, be put aside by answering,—the nutriment suitable to his time of life. The foolish notion that prevails, that as we grow older we require more nourishment, has robbed us of many a good old friend, long before we were willing to consign him to the earth.

In infancy (which is the first twelve months), the mother's milk is best, provided that mothers form it from proper materials; for instance, the mother should regulate her own diet, according to the age of her infant, taking at first gruel and milk, then bread and rice, then a little meat, as her child acquires strength; but no fermented liquor. Hundreds of children perish from this cause in England during teething; and hundreds of mothers are rendered unable to continue nursing by over stimulating themselves in their duties, and at last finding even the strongest stimulants (from having exhausted their powers of digestion) are no longer able to sustain them. Unfortunately this practice is sanctioned by many of the medical profession.

After twelve months, if teeth have arrived (for it shows a total disregard to nature's dictates to give animals solid food who have no teeth to eat it with), then the infant may eat rice, bread and milk, mashed potatoes and milk, bread puddings, egg food, fish, esculent vegetables, weak animal broths, and occasionally, every two or three days, meat may be allowed; but mark, the latter is to be withdrawn, if in the evening flushed cheeks or fever prevail. Water, milk and water, whey, weak cocoa, or toast and water, according to the degree of thirst, may be appropriated as the beverage. It will be observed, that after, and indeed frequently before, twelve months, until seven years and more have been passed over, children are subject to many febrile affections—such as teething, measles, hooping-cough, scarlet fever, small-pox, and several contagious maladies; and if their condition at the time of the occurrence of any of these is inflammatory, their escape from danger and death will be very hazardous. With this knowledge in our possession, how blameable shall we be not to attend to their diet, and to regulate it according to rational principles. The most valuable legacy we can bequeath our children is—"a sound mind in a sound body;" and how can we possibly ensure them these, without preserving our own health that they may be born healthy, without early educating or training their frames according to their constitution, age, and circumstances? Without health, although they should be endowed with all the riches of a Crœsus, tasteless and weary must their existence be,

> "Whom slumber soothes not—pleasure cannot please."

Till seven years old, then, the diet, though nourishing, should not be stimulating; a due proportion of rest should be enjoined; and the hue of the complexion should be remarked. If the child frequently flush, and the general colour approach to crimson, immediately should both quality and quantity of food be diminished. If the child, on the other hand, be too pale, and its muscles feel flabby, which is immediately ascertained by taking its arm within your fingers' grasp, then animal food, pure air, with exercise, should, as soon as possible, be procured it. Therefore the firmness of the muscles should be frequently examined.

From seven to fourteen, a larger portion of animal food should be gradually permitted, and milk diet diminished; proper rest enforced, in the periods of active growth of the body, and great care should be taken lest one set of muscles, by being more acted on than others, should prevail and induce deformity. Incredible are the numbers of children deformed at this age by want of attention, or want of knowledge, in their parents, in permitting violent exercise of some muscles with inactivity of others. Of the remaining period, I can more conveniently speak when treating on intellectual education.

On the subject of human food, much that is interesting might be said; but I should be sorry to drag you through the maze created by very learned physicians, who advocate different and adverse opinions on the nature of food. One party assert that animal diet exclusively is the best adapted for man, and support their argument by instancing the rude health and Herculean strength of our hardy ancestors.

The Romans certainly did not find the British aborigines very good cooks; nor conversant with the tillage of the earth. Cæsar, Strabo, Diodurus Siculus, and others, tell us that the Britons subsisted chiefly on flesh and milk. Cabbages even were not cultivated until the time of Catharine of Arragon; and she sent to the Netherlands for her salads. Another party maintains that a vegetable diet is natural to man; but we know that scrofula and consumption would be even more frequently seen if vegetable food alone were to be eaten. Indeed, the construction of the human stomach and other digestive organs partakes of a similitude to the stomach of both herbivorous and carnivorous animals. Hence, truth in this, as in many other questions, lies between the two extremes; for a diet neither exclusively animal nor vegetable, but composed of both, is most natural, and is found to best sustain all the powers of the human frame in its fullest vigour for the longest period of time. Of the known vegetables and animals which best subserve for the food of man, it may be well now to consider, and they have been arranged into a table by the French physiologist, Majendie, according to ten qualities.

1st. *Fibrinious*—The flesh of various animals, such as venison, beef, mutton, hare, &c.

2d. *Albuminous*—Eggs, &c., fish.

3d. *Gelatinous*—The white and young meats, veal, chicken, calf's head, feet, some fishes, &c.

4th. *Fatty or Oily*—Animal oils, pork, bacon, some oily fruits.

5th. *Cheese-like*—Milk, cheese, &c.

6th. *Farinaceous*—Wheat, sago, barley, oats, rice, potatoes, arrow root, &c.

7th. *Mucilaginous*—Parsnips, carrots, turnips, asparagus, sea-kale, &c.

8th. *Saccharine*—Sugar-cane, figs, dates, peaches, plums, &c.

9th. *Acidulous*—Oranges, pears, apples, and many other fruits.

10th. *Aqueous*—Water and watery beverages.

These, with the addition perhaps of salt, are all the aliments actually needful for man's subsistence.

By analysing these substances, and reducing them into their natural elements, chemists have sought to prove that only a few of them are required by man; but I have always found that the stomach's own chemistry laughs to scorn all the boasted knowledge of the chemist, and that it can turn the fewest elements into the greatest number of compounds.

The horse is a sufficient instance. He is fed on hay, corn, and water for years; yet, during that period, the elective power of his stomach and digestive apparatus separates from these elements, chyle, blood, bone, tendon, bile, fat, muscle, flint, iron, soda, lime, glue, albumen, &c., &c. And the mode in which the stomach sets about these changes in the digestion of our foód, has, by an accident, lately been made known to the eye of Dr. Beaumont and others. A gun, loaded with powder and duck-shot, was, unfortunately, discharged about a yard from the side of Alexander St. Martin, a young Canadian, in robust health, a few years ago. The shot carried away the skin, muscles, some lower ribs, a portion of lung, and a piece of the stomach and diaphragm. After the fourth week (being treated by Dr. Beaumont) his appetite became good, digestion regular, and, in short, his general health remained unimpaired, though the external opening into the stomach continued. This account forcibly reminds one of the story told of a gentleman, who had a window put in his side to enable him to ascertain what was going on within. For more than ten years St. Martin was occasionally experimented on, and tables were constructed of all viands subjected to his stomach capable of digestion, with the time each took during this process. The changes occurring in the stomach after eating were noted, and may be summed up thus:—Whenever food was introduced within the stomach, whether by the throat or through the new trap-door, an injected state of the membrane immediately ensued, opposite to, or rather in contact with, the morsel of food. The arteries were immediately dilated, and the mucous membrane changed to a vermilion colour; the gastric juice, pure, colourless, and acidulated, trickled down the sides of the stomach, commingling with the food. The most remarkable quality of the gastric liquor is its power of dissolving almost every thing submitted to its action, except living or some inorganic matters. Water seemed to vanish by some *hocus pocus* power peculiar to the stomach; for one minute you saw it—the other it was gone. Of course it was absorbed by the absorbent vessels and veins, and carried into the blood, to be again separated by the kidneys.

Reviewing digestion, step by step, in man, it appears to be, first, a solution of the food by the gastric juice, pressed into it by the muscular contraction or closure of the stomach around it, shifted gradually towards the pylorus or valve opening into the first bowel; there mixed with the bile, passed onward in the shape of pulp, having lost its fluid by absorption, it is applied to the open mouths of the lacteal vessels, carried through the glands of the mesentery (which are placed, like so many porters, to examine its pretensions before passing it, to form pure blood), and ultimately, mixed with the current of blood at the junction of the jugular and subclavial veins. So that you see digestion is a perfectly chemical operation, performed in the laboratory of the stomach and bowels; and do you think, if this beautiful process were more generally known amongst many who play such tricks with their digestive powers, expecting their stomachs to correct by its own instinctive sense their want of sense—do you think fear would not operate to prevent their subjecting their digestion to labours so unequal and so unnatural? In taking a bird's-eye view of organic life, you will first observe how various earths, dissolved by water, become the food of vegetables—how vegetables become the food of animals—how many animals seem, in their turns, to be but so many machines, destined to convert vegetables into another shape, for the purpose of being, in their turn, easily digested by larger carnivorous animals. Then omnivorous man comes in, and digests them altogether, making clear this hypothesis, that—"to eat or to be eaten," is the great law in the economy of animated beings. It would have been easy for the Great Creator to have formed only herbivorous creatures; but then animal life would have overstocked the earth, to the annihilation of vegetables; whereas, by alternate destruction of vegetables by animals, and animals by each other, when increasing too rapidly, a just balance is maintained betwixt carnivorous and herbivorous creatures, and the vegetables that sustain the latter.

The Creator has made nothing that is unuseful—nothing so insulated as to have no relation with anything else—nothing which is not serviceable or instrumental to other purposes besides its own existence—nothing that is not to be applicable or convertible to the benefit of His sentient creatures, in some respect or other. The mineral has a connexion of this sort with both the vegetable and animal kingdoms, and these with each other. The same principle has been pursued throughout the animated classes of nature. No one species of living being has been formed only for itself, or can subsist in absolute uselessness to others. This is one grand purpose for causing so many races of animal beings to subsist on each other. By this system, each enjoys the gift of life, and each is made to contribute, by the termination of that gift, to the well-being of others. Fishes are thus useful to each other, to many birds, to some animals, and to man. Birds have their period of happiness for themselves, and are serviceable to others of their kind, and to man, and to some quadrupeds, in their mode of death, instead of mouldering through corruption into their material dissolution. Quadrupeds have the same double use in their existence; their own enjoyment, and the benefit, at their death, to those of their own order, and to the birds and reptiles, worms and insects, that have been appointed to derive nutrition from their substance. All the kingdoms of nature have been likewise so constructed as to be beneficial to the human race, not as nutriment only, but in the thousand conveniences to which they are convertible. The amphibious order of nature is no exception to these general results. Its various genera contribute their proportion to the common stock of mutual utilities. They have their own gratification from their personal existence; they contribute by their substance to the maintenance of others of their fellow-creatures; and some of their genera serve to multiply the conveniences and pleasures of man. He derives advantages from all that exists in as much larger a degree to any other animal as he is superior in his intellectual exertions and universal capacity.

Reflecting on this wonderful adaptation of means to ends, till the great harmony of Nature unfolds itself before our mind's eye, we cannot help exclaiming with Milton—

"Heaven is for man too high—be lowly, wise."

And carrying the mind's eye from the order of earthly things, to the vast system of worlds that bespangle the heavens, and float in eternal harmony around us—pregnant with the spirit of that Deity which animates alike the mere globule of matter, and the infinity of worlds—we do not wonder that a great poet should thus have apostrophised the pervading Spirit of Providence—

"Spirit of Nature—here in this interminable
Wilderness of worlds, at whose immensity
E'en soaring Fancy staggers,
Here is thy fitting temple.
Not e'en the lightest leaf
That quivers to the passing breeze
Is less instinct with thee!
Yet not the meanest worm
That lurks in graves, and fattens on the dead,
Less shares thy eternal breath!
Spirit of Nature! Thou!
Imperishable as this scene,
Here is thy fitting temple."

I know that to some these observations may seem irrelevant in a Lecture on Education, but could they go with me into the world of suffering that every medical man must daily witness, arising out of ignorance of the rules of diet and drink, they would with me see the importance of making a knowledge of our own body, and its proper nutrition, a primary object in the education of youth.

Morbid sensibility of the stomach is the first and great cause of scrofula, melancholy, and madness; and it is often distressing to witness a genius of the first class labouring under all the horrors of apprehension which a disordered "imagination bodies forth," and this produced by revulsion to the brain of the irritation of disordered stomachic nerves. I said that a table of the different aliments which Mr. St. Martin's stomach had been subjected to was drawn out; you will find it in Coombe's work on Digestion and Dietetics—a work which, like his principles of physiology, should be read by all who wish to know how to manage their own health on rational principles, and almost without the aid of physic.

I shall now read to you an extract from the diet table, which shows you the comparative length of time certain viands were in digesting in St. Martin's stomach, he being kept by diet and exercise in the finest health, so as to give the stomach the best vigour for digestion.

ARTICLES OF DIET.	STATE.	TIME OF DIGESTION.
Rice	Boiled	One hour each.
Tripe	Do.	
Eggs	Raw	
Sago	Boiled	Between one and two hours each.
Brains of sheep	Do.	
Venison steak	Broiled	
Trout	Do.	
Milk	Boiled	Two hours each.
Tapioca	Do.	
Barley	Do.	
Ox's liver	Broiled	
Cod fish	Boiled	
Raw milk		Between two and three hours each.
Turkey	Roasted	
Sucking pig	Do.	
Lamb	Do.	
Chicken	Do.	
Oysters	Raw	
Beef	Boiled	
Sponge bread	Do.	
Broad beans	Do.	
Potatoes	Do.	

ARTICLES OF DIET.	STATE.	TIME OF DIGESTION.
Eggs	Boiled soft	Three hours each.
Bean soup		
Chicken soup		
Wheat cake		
Beef	Recently salted, and boiled	
Pork	Stewed	
Mutton	Broiled and boiled	
Eggs	Hard boiled	Between three and four hours each.
Do.	Fried	
Flounders	Do.	
Cod fish	Do.	
Oysters	Roasted	
Do.	Stewed	
Cheese	Raw	
Bread, wheaten	Baked	
Carrots, Beets	Boiled	
Turnips, Potatoes	Do.	
Beef	Roasted	
Do.	Boiled	
Pork steak	Broiled	
Mutton, fresh	Roasted	
Sausage, beef	Broiled	
Salmon, salted dried	Boiled	Four hours each.
Fowls, domestic	Do.	
Ducks	Roasted	
Beef, fresh	Fried	
Veal	Broiled	
Animal heart	Fried	
Soup, vegetable, and beef		Between four and five hours each.
Wild ducks	Roasted	
Beef, salted and hard	Fried	
Pork, do. do.	Boiled	
Veal, fresh	Broiled	
Mutton suet	Do.	
Gristle	Do.	

Much, very much valuable knowledge may be derived from this table, and especially if you consider it in connexion with the state of the body, and of the mind you are in at the time you would institute your experiment on feeding. Shakspeare, who knew every thing, it would appear, worth knowing, does not seem to have overlooked the effects of an agitated mind on the appetite; for in his Henry the Eighth you will find, when the king detects Cardinal Wolsey pillaging every post he could, and advising him according to the instructions of the Pope of Rome, the king sees it necessary to depose the cardinal; and after a good deal of cutting irony, he hands to Wolsey a schedule of the cardinal's wealth which he had drawn out, and the cardinal's own intercepted letter to the Pope, and says, "Read over this, and after this, and then to breakfast with what appetite you may;" and it is not difficult to guess how much breakfast he took that morning.

You will perceive that I have divided my table according to the time each aliment takes in digesting; but it is necessary to be observed, that this time would be varied by several causes besides mental, which I have just mentioned. I will illustrate one, and then your own minds will, by analogy, furnish you with others. Suppose you had been taking violent exercise—say at cricket, rowing, or hunting, and remembering that animal food was most nutritive, and needing nourishment, you ate heartily of beef steaks, and drank plentifully of port wine—do you think you would derive much immediate nourishment from this meal? If you did, you must have a wonderful "digester," as the vulgar people often call the stomach. Reflect on the tired nerves and exhausted body. Do you not think the stomach, and its nerves and muscles, are tired too? Would you impose another labour on them, to furnish you with gastric juice at such a time to digest the hardest food you can put into it? And would you hurry into your blood the high stimulus of port wine, to supply the loss of the watery fluid you had spent in perspiration? It would be but fair, if you did, if the stomach declared off any servitude with so unreasonable a task-master. What should you then do, if you come in after hunting, dancing, or any great fatigue? What do you do with your jaded horse, who has been the generous companion of your sport (and but too often the victim of your rashness)? the reasonable master gives him first gruel or warm water, to soothe his enfeebled stomach, to slake his thirst, and lightly nourish his almost spent energies; and then waits some time before he gives him his corn. But, as I have before said, man is far more careful where pecuniary interest is concerned, in tending his flocks and fields, or preserving his horse, than even when the life and health of his own offspring are in jeopardy. He is more rational in the production of the brutes around him, than of the beings who are destined to be their masters. The natural effect of these remarks on your minds should be, to show you, that in proportion to the actual state of the body, so should be the quality and quantity of the food—light and easy of digestion when the body is fatigued; more substantial when its energies, although good, are still in the expectation of being exhausted from the prospect of continued labour.

Vegetable food is long in digesting; hence not the food for invalids, nor dyspeptic persons. Animal food is highly nutritive and stimulating; hence not to be taken when the body is feverish. Farinaceous food is rapidly digested, and stimulates comparatively little; hence this is the food for infancy and old age, in debility from illness or fatigue, and also for the evening meal, when the stomach, like the body, has borne the brunt of a hard day's labour, and should, in pity, be spared from work in that hour when the idle body is taking its rest. This interesting question probably arises in the minds of many present this moment—"What should be our food, then, at different parts of the day?" I will state to you the course which, in my humble opinion, is best. Soon after rising in the morning, breakfast should be taken; the nerves, brain, and muscles are now supposed to be renovated, by the undisturbed repose induced by the previous day's labour. A light farinaceous breakfast, with some mild simple beverage, should be taken; unless indeed you are not likely to dine till late, and then meat should be added, and not more than six ounces of fluid should be allowed. But what do we generally take for breakfast? Why, because I suppose the nerves of the stomach are not sufficiently debilitated by the evening's mistakes, we pour into it a pint or more of hot tea or coffee, and eat only a few ounces of bread, thus further debilitating the already weakened nerves, and making the mucous wrinkles of the stomach into a substance like an old washerwoman's thumb. We are then surprised if flatulence takes place during the forenoon; and then we go to the doctor to tell our misdeeds and to get tonic medicines. Certainly doctors should live, poor things, although they do multiply at present alarmingly fast.

Now we go on to dinner,—but stay, perhaps some of my hearers would rather we went to lunch—a sort of ante-dinner—a kind of earnest that dinner time is not far off; excusable only when taken four hours after breakfast; and the other dinner, the acknowledged "feed," four hours after that. Well, the appetite at lunch is satisfied, with what I will not stay to enquire nor explain—a piece of bread and water, I hope. Then comes the *sine qua non* of an Englishman's very existence—his "real dinner;" and then the poor stomach is indeed hardly done by; tired by the little dinner, and just disposed to take a quiet snooze, when the trap door opens, and down comes a flood of soup with vegetables in, bread, meat, and cayenne pepper; then wine, water, beer, cider, &c. &c.: well, before the absorbent porters can carry these queer fluids off, there arrive, pell mell, roast meat, fowls and ham, game and made dishes, and these jostle into place; then vegetables, salt, pepper, bread, drink again; and then some sweet things, puddings, pies, creams, custards, and blancmange; and then comes macaroni, cheese, bread, ale, salads mixed with vinegar, oil, and other combustibles. After this, strong wine, sweetmeats again, and, alternately, claret and sweetmeats, till they begin to "get not good," as the child said when he was tired of his plum pudding; and directly after, without any respite for the stomach's workmen, comes a flood of tea and coffee, buttered toast, tea cake, muffins, crumpets, &c. &c. Prodigious!!! as Dominie Sampson would exclaim. I often fancy a soliloquy uttered by the stomach something after this fashion,—"Well! ah me! what an odd master I have got to be sure; what does he think I can do with all these queer things? Hallo! what, coming again! oysters alive, I declare—(warm place for the natives), toasted cheese, mustard, macaroni, and spiced ale and toast; well, I shall certainly be killed!—hold hard, or I 'll positively cut the connexion."

This may appear very absurd and ridiculous; but, let me ask, have I overdrawn this picture for thousands and thousands of individuals, who would be quite offended if they were to be called unreasonable cormorants?

Now, gentlemen, in the education of your grown-up selves, in the example you put your children and your servants, do you bear in mind that from folly in overfeeding, want of exercise, and pure air, spring most "of the ills that flesh is heir to;" and if the loaded system and gorged liver (not to mention the brain) are at length obliged to deposit the fat, and spoil the figure nature intended man to have, and cloud the mind nature intended to be bright, and dull the edge of wit, remember the anathema Shakespeare pronounces on the aldermanic tub—

> "Large paunches make lean pates, and dainty bits
> Feed fat the sides, but bankrupt out the wits."

Before I leave the subject of diet for other subjects essential to this discourse, let me give you some general rules for food and drink.

Let your meal be no more than your stomach can carry about without being aware of it. In winter, animal, and in summer, vegetable diet is best; you loathe meat in summer. Do not drink till you have done eating; do not take stimulants, they affect the head and induce fatigue; do not take supper if you have disturbed dreams, head-ache, and furred tongue in the morning; take sufficient exercise in the day to insure you one sleep of six hours long; and this is enough, generally speaking, for men, though not for children nor age. Children, when very young, should sleep after each meal; and the meals of the infant should be at intervals of three hours each, except in the night, when five hours may elapse between each feeding; they should sleep alone, to induce their bodies to maintain their own heat; they should be thoroughly washed night and morning—in summer in cold, and in winter in tepid water, and should be well dried and hand-rubbed afterwards; and then you may expect them to be cheerful, happy, healthy, and, according to their parents, intellectual and intelligent.

Civic Life.—In civilized, but more particularly in town life, the senses are, by collision, rendered more acute, the passions more ungovernable, by being stimulated and pampered. Hence among those who have no work, and those who work with head instead of hand, we find an unnatural degree of excitement kept up. The extent of injury the bodily health sustains by this is incalculable. In this country, where man's relation with his fellow is multiplied beyond all parallel, in consequence of the scramble after wealth, the interest attached to politics, the party feeling it calls forth, separating friends and brothers, and, like the upas leaf, poisoning all it falls upon, the bitterness of the *odium theologicum*, the clashing interests of commerce, the jealousy of literature and the arts, not to mention the jealousy of physic—amid such a conflict of feelings and passions, need we marvel if disorders of the cerebral system ensue. I believe human nature is much the same in every calling in life; and where the temporal concerns of an immense population are in a state of perpetual vacillation—where such speculative risks are daily run, from the disposers of empires in Leadenhall-street, to the potatoe merchant in Covent-garden, it is certain that the corporeal fabric will be injured by mental perturbation. The mental war begins in our schools. The conflict of mind kept up by the emulation of prizes—the unnatural stimulus of the senses and passions by the unshackled liberty of libertine authors—all tend to exhaustion of those powers at an early period, when corporeal exercise should be most regarded, and those energies of mind husbanded which ought to last through "life's long day," and shed a halo of pure wisdom o'er expiring age. But if we cannot quell the thirst for precocity of talent, we may render its effects less deleterious, by inducing more bodily exercise in the open air, by travelling with our children, and taking them from their books. And now, if you please, we will consider the effects of air and climate on the human body.

AIR.—We all circulate two kinds of blood—venous and arterial. When the body has done with the former, the lungs receive it, expose it to the air in their little cells by respiration, and purify it for its next course, after it has received the new chyle, as I explained to you recently. Thus the exposure of the blood and juices to the action of pure air is essential to the health of both animals and vegetables; and you will bear in mind, too, that as they receive air, they also give off noxious exhalations from their lungs and leaves. Now suppose the exhalations are thrown off a poisoned or unhealthy body, or leaves and other lungs, and vegetables take them up; we know that by breathing it, prussic acid will kill in a few minutes, if it be strong; we know that miasmata or marsh poison has killed thousands of our finest troops, and thus the enemy has seen us vanquished without firing a shot; yet with all these acknowledged facts before us, how little do the parents of scrofulous and consumptive children with weak lungs think of this in getting their offspring cooped up in manufactories, crowded schools, and theatres. If they pine away, then they are physicked; and if the strong propensity implanted in them by the great God who gave them life bestirs them to seek the air, they are chided and driven in, lest they catch cold and become ill.

Do I draw the picture too strong? Do I err when, in treating of education, I begin with the laws of the body? What is the value of Latin and Greek, music and drawing, when the bloom of health is nipped in the bud, and you have for ever robbed your children of handing down to their offspring a healthy generation? You kill them before their frames are formed; you close the grave over them long before nature intended they should be restored to earth. I am certain of the fact, that I could create consumption, by improper food and bad air, in the healthiest frame God ever formed, by the above treatment. Children make their rabbits and birds consumptive, and farmers their pigs and sheep, by bad air and food; and medical men make their patients healthy, when they have exhausted the art of physic, by sending them off a journey to another and a different scene. But there is another practice among mothers, which assists them very materially in making their daughters consumptive and deformed, and this is by pinching in their lungs and loins by stays, and making them always use their right hand, instead of using both.

Now the chest is so elastic that you may, in infancy, mould it into any form; and let us stop a few minutes to consider the physical effects of tight lacing. The lungs are reduced to half their size; the heart and blood vessels are pressed upon, the blood is driven to the head, and headache and hernia is often the result. I once saw a girl, where the lungs had been driven out of the chest under the collar bone into the neck, by excessively tight lacing! Can you imagine the breathing free, and the blood purified, if the lungs cannot expand?

Persons daily immolate themselves at the shrine of fashion, under the false impression that they can improve the human form divine. Mothers are first induced to adopt the common practice of bandaging their children at the advice of their nurses, who assert that it will bring them into shape. From the continuation of this practice, the capacity of the chest evidently becomes diminished, in proportion as the child grows; for the ribs, at this early period of life, are but cartilage, and easily yield to compression. The infant, in consequence, is attacked by a slight, short cough, a hurried respiration, considerable restlessness at night—the nurse *must sleep*—recourse is had to what may be called "a real blessing" to inhuman nurses—anodynes, as opium, &c., remarkable for their "soothing" and *composing* effects. The poor innocent sleeps; but it gradually becomes emaciated, and she who was once a fine little girl, is considerably less at three months' old than when she was born. The mother then becomes alarmed—calls in professional assistance; the error is pointed out, and the child saved: a lesson is given to an anxious mother she never forgets, but the nurse continues obstinate in proportion to her years. When, at the early age of ten, these bandages are converted into a more formidable and injurious apparel, being fortified with bones running in every direction, the *young* lady is sent to a boarding-school, where every attention is paid to her studies, and she ultimately becomes a paragon of excellence. Nature has endowed her with an adequate share of intellect, which has been highly cultivated, and she is found proficient in every branch of literature, science, and the fine arts. Nature has also endowed her with the outline of a good and graceful figure; but this, alas! has been most seriously mutilated and deformed. That constitution, which was once strong and healthy, has become enervated and debilitated; the space where the purification of that important circulating fluid, the blood, is effected, has been seriously diminished, and there exists a predisposition to affections of the heart and lungs; in fact, the body and general health suffer in the inverse ratio, as the mind becomes improved.

How I should like to lace up the chests of those papas who admire thin waists, and turn them into a field with a bull at their heels, and I 'll be bound they 'd soon discover the necessity for lungs that could expand.

According to Dr. Bostock, a man consumes 45,000 inches of oxygen, and gives out from his lungs 40,000 cubic inches of carbonic acid gas, in twenty-four hours. Now carbonic acid, being heavier than common air, falls on escaping from the body, and by this beautiful provision of nature it is prevented from contaminating air from which you draw in the next chestful. Well, should you then put your infants in cribs, made air-tight with glazed cotton or merino, so that, lying in a well, they must breathe over and over again their own effluvia?

For this same reason, infants should sleep without curtains, and should not sleep in the same bed with their parents, nor wholly under the bed clothes. It is really astonishing that we do not kill more than 45 per cent. in ten years, which is about the average of infant mortality till that age, for we take the most sure methods of doing it.

Climate and change of air are amongst the external agents affecting the body, and therefore belong to this part of my subject. Climate I shall call the peculiar atmosphere of any locality; and change of air is the medical means employed in altering the nature of the fluids and solids of the body in many diseases dependent on an unhealthy state of the blood, nerves, and secretions.

Climate may be cold, warm, dry, or damp—a cold climate depresses animal action; digestion is slower; in a word, all the functions of the body are more tardily performed in a cold climate. It follows, then, that the body lasts longer, during its animal chemical process of composition and destruction, in a cold, or a moderately cold climate, than a hot one. Hence the Russians are more disposed to longevity than the Indians.

In Russia, it is not thought very remarkable to meet with persons more than one hundred years of age, and in India, where the pulse is much accelerated, and all the excretions go on most rapidly, a centenarian is an object of universal surprise.

Now these facts are of no value, except as an object of philosophical curiosity, unless we turn them to account in the choice of abode for delicate persons, according to the idiosyncracy or peculiarity of their constitutions. Suppose it to be our lot to possess a puny, excitable, irritable frame—shall we seek a hot climate to extend our life, or shall we not rather endeavour to find an atmosphere of moderately bracing quality, as it is called—a mountainous district, for instance, such as—

> "The healthy vales
> And mountain sides of Switzerland or Wales;"

and remain there till the body is become more enduring and less excitable. If we want an example of the effects of a cool climate on animal growth, let us take our instances from the hardy Highlander or Welshman; or, by comparative anatomy, let us look to the hardy Shetland or Welsh pony, compared with the Arab or Indian horse; the sheep-dog, with the tender Italian greyhound; the Chinese or Neapolitan pig, with the Russian and Swedish wild-boar.

A dry climate has the opposite tendency to a humid one; the former, if too dry, stunts the growth, and absorbs the secretions; the latter, relaxes the frame, rendering the features flabby, the body enervated, and the mind imbecile. There is a vast difference in the effects of the Devonshire and Lancashire coasts in this particular; and on this point the skilful physician will select the climate best adapted to his patient, in reference to his original frame and type of disease. A warm and dry air has a powerful influence in promoting an equal distribution of the circulating fluids over the whole system.

It follows, then, that persons having become enfeebled by the debilitating effects of a neighbourhood like the midland counties, should, to renovate and preserve their powers, be removed to a more northern climate. The skin disorders, affections of the eyes, scrofula, and consumption, of such a locality, might, by a timely change to a drier air, be checked in their career.

The moral influence, too, that exercise, travelling, and change of society exert on all, are most astonishing. It is not difficult to understand how a pure and a new air may assist in making better blood; how exercise may cause it to be better distributed to all parts of the body; how change of society may engage different faculties of the mind; but how cheerful company, and new scenery, should give a healthy impulse to all the bodily organs, will be more readily proved as a fact, than explained as a theory, until we know perfectly the physiology of the brain and rest of the body. There are few amongst us who have not remarked, that they can eat and drink more, and digest better, at their neighbour's houses, than at their own; and that the late hours enjoyed amongst their friends, would be spent at home very unprofitably with regard to health. How is this? The mind—the mind throws off its anxieties, leaves its cares behind, and puts itself into a frame to amuse and be amused; the effect travels like magic through the various organs of the body; and the churl, whom nothing pleases at home, becomes a most amiable companion abroad, where he obtains a character for agreeableness and affability, which his wife and children know, to their sorrow, is likely to be but of short duration.

Look at the good-natured and jovial sailor, just landed; the merry coachman, who turns every thing that passes into fun; the wit and shrewdness of the auctioneer, who changes his company every day, and knows to his gain how much better people bid when their minds are kept in a merry mood; look at the broker coming off 'change on a dull day, and see the same man when stocks are up — his countenance is up with the stocks and down with them too.

Even as far back as Hippocrates, those afflicted with chronic diseases were recommended to change the air and soil.

"In morbis longis, solum mutare."

The Romans sent their invalids into Egypt for change. In short, it would appear that one particular air, be it ever so pure — one food, ever so good — the same society, ever so select — will all, in time, pall on the appetite, and cease to interest the mind. The body languishes and loses its tone in the same routine of circumstances, and becomes characterized externally according to the internal type of the mind's thoughts; hence the shrewd policeman, and experienced pickpocket, know their game at a single glance; and, what is most remarkable, although these facts are familiar to every observer, yet the distinguishing character of a man's face can scarcely ever be changed. These observations might be extended to volumes, but I must now proceed to sketch, by a touch or two, a few other topics, and then I close the subject of corporeal education.

Every one knows that change of seasons, and even of weather, will produce changes both of body and mind. Look how affable your morning callers become on a bright day; even the soul-withered politician thinks the country then in a safer state, and fancies his party has become stronger when the day is propitious. The seriousness and gloom of the Englishman are partly occasioned by our hazy days and cloudy skies, and are a constant theme of jest and joke to the light-hearted Frenchman and Italian, who live under a different etherial canopy.

There are many among us who can tell if the wind is in the east, before they rise from their beds, by its pernicious effects on their spirits. The rheumatic sufferer will bear me out in these remarks on the influence of external agents exerted on the body; and even the old ladies, with their aching corns, on the approach of rain, will say, "There is some truth in these observations." Now if a corn, which is nothing but a chronic inflammation of the cuticle, which produces a thicker skin, and consequently an increased pressure from the shoe, is so sensitive to the change of weather, is it not probable that the whole body, in disease, is similarly influenced by change of weather and climate? Do not our cows lie down before rain? Do not our dogs become sleepy, and our horses dull? The snail leaves his home, the spider his hiding-place, and the fish takes the bait before rain; all these changes in the condition of nature do not take place without some internal moving causes in her constitution, and if we studied to know more of the physical properties of bodies, we should more frequently turn them to our advantage.

Lest I should be accused of making my auditors too wise in our art by my illustrations of the human body, and thus endanger the cause of physic, I would observe that—I have no fear of this; it is only quackery and the love of physic taking that will be endangered by a correct knowledge of ourselves. Who in their senses would of their own accord pour physic, of which they know little, into a body of which they know less? But the public mind is become impatient of restraint, and it will have knowledge, get it how it may; and if it cannot receive it from a pure source, it will have it from a muddy one; if it cannot have rational physic, it will have the nostrum of quacks—people will read their ignorant and indecent publications. If every one had a correct knowledge of his own body, and the economy of its complicated organs, do you think he would submit it when out of order to pretending tinkers?

Or, if that were the case, do you think our newspapers would teem with advertisements of obscenity and filth, so bad, indeed, as to make them sometimes a nuisance in families? If the heads of our legislature knew the human frame, and duly appreciated bodily health, would they not institute a sanatory board, (as indeed there is on the continent,) to watch over the public health, the salubrity of cities, and remove nuisances? Would they not institute public baths, public walks, public amusements, public gymnasia, public schools of anatomy, where our less fortunate citizens could have the chance of forming healthy bodies, and inculcating sound first principles of bodily education? What would it cost government, to institute public schools of anatomy and physiology for the use of all seeking this species of knowledge?

I should say something of atmospheric electricity as influencing the health of body and state of mind. Every lady knows, by the crackling of her hair, as she dresses it in some states of the atmosphere, and every child, also, that has rubbed the cat's back in the dark, knows that animal electricity does exist. Many, also, perceive the electric state of the atmosphere before a tempest by their feelings; and perhaps a highly sensitive female nervous system may be influenced by a very genteel, handsome, young animal magnetizer. But as I do not understand this animal legerdemain of magnetism, or mysticism, I should only lead you, by dilating on it, into a very wide and deep labyrinth; therefore I must be content with merely observing, that electricity has much to do with the growth, state, and impressions of both mind and body, and on every kind of animal and vegetable life.

In speaking of intellectual education, in the next Lecture, perhaps I may find a niche to put these things in, which time compels me now to abandon.

LECTURE III.

MENTAL OR INTELLECTUAL EDUCATION.

Ladies and Gentlemen,

In the two former Lectures, on the subject of Education, which I have had the honour to deliver to you, I treated of corporeal culture, or training the body in such a manner as to ensure a sufficient degree of health to bear the exciting or depressing effects of mind on the human frame; because, as I then endeavoured to show, it is futile to expect continued exertion of mind without vigour of body.

My task this evening is, to endeavour to show how the organ of the mind—the brain, is to be acted on, in order to bring forth the intellectual powers, encourage the moral sentiments, and repress excess in those passions natural to man, though injurious to him by their abuse in civilized society. That I may assist my juvenile hearers, and those who have not thought on this subject before, it is better that I should commence with the natural history and description of the brain, the laws of its growth in youth, and its decline in age.

Of the chemical composition of the brain and nerves I shall not treat, as it is not essential to the comprehension of the action of the mind.

Form of the Brain.—Of the form of the brain in the lower creatures, I shall say a few words. Its form is regulated either according to the number of parts composing it, or according to the shape of the animal and its habits—being long in the flying fish, so that its head might better cut the air; and it is globular in those animals where the head is not necessarily in connexion, as to its form, with the habits of the creature.

In the formation of the brain in the human species, the first rudiment seems to be a globular mass added to the top of the spinal cord, within the rudimentary skull, which ultimately becomes the largest ganglion of the future brain, and is named the pons varolii. When any accidental circumstance suspends the formative power of the fœtus, the infant is sometimes born entirely without brain, save this first ganglion at the top of the spinal cord, the ganglion answering to the pons varolii.

In treating such subjects as the anatomy and physiology of the brain before a mixed audience, and not a medical one, it is of importance that

I make my first principles or groundwork clear, or I cannot expect to carry you with me into the deductions on which I propose to establish the management of the mind, by education according to the laws of that most delicate structure—the human brain.

I must, therefore, beg your patience whilst I describe a nerve, its receptacle or magazine called a ganglion, and then a chain or mass of ganglions, according to the economy of the animal, as we find it in the lengthened brain of the flying fish, or the more globular one of others, as in the ray or shark, and in a still more rounded form in the elephant and man.

You will begin then, if you please, with the first idea of sensation, touch, by supposing a single thread of nervous matter to be agitated from collision with a hard body, and thus to have received a jar which awakens the sensation of touch; the vibration runs along the whole thread, and gives the primitive idea of the nerve of touch, and its operation is called sensation—such as you find it in some insects of the mollusca tribe. Such is, then, your first clear idea of a nerve; now suppose a white silvery thread, having the faculty of sensation inherent in it, distributed in filaments over the whole body, this is the nerve of touch. Take another similar thread, and suppose it placed by the former one, and, in your imagination, endow this second thread with the power of communicating the impressions made on the first thread at will to another body—say, if you please, to a muscular fibre, and then you will have a perfect apprehension of the agent of motion—the motive nerve. You have in your mind's eye now an instrument of sensation, represented to you by the first thread, and an instrument capable of communicating motion, represented to you by a second thread.

Now for a third idea, and then you will have formed a correct impression of the type of the nervous system in all the lower living things created in which a nervous system has been yet discovered; and in these three conceptions you have also the type of the most perfect nervous system anatomists have ever yet found in the most perfect animal—man.

Imagine, then, a third nervous substance, of a roundish form, softer than the other two, apparently tangled and confused in its texture, from having globular bodies intermixed with and interrupting the lines of its fibres, greyish in their colour, joined to the extremities of the two other white threads—this is the important nervous organ called a ganglion.

Now, conceive the third substance—the ganglion, to have the power of receiving and perceiving the sensation of touch conveyed by the first nerve, and of transmitting a modified sensation along the second nerve, called the motive impulse, and your conception will be complete, and serve you to comprehend all the complicated faculties of the more complex portions of the nervous system, which we find in the upper links of the chain of animated nature.

I have thus endeavoured to give you a clear notion of what you would find, if you were anatomists, in all the animals ever yet examined; that is to say, you would find white nerves for two functions—sensation and motion, and a grey mass, confused and softer, and in connexion with these, called a ganglion, or, when compounded, a brain. In addition to these, I have now to give you a conception of the principle of life, which endures as long as the blood is supplied; indeed, the whole machinery continues, according to one of the laws of life, susceptible of the stimulus of that fluid—and this brings me back again, you perceive, to the subjects of the two former Lectures, on the Functions of the Blood, and will, in your minds, awaken ideas derived from them, and applicable to the elucidation of the topic of to-night's investigation.

Imagine this ganglion full of blood vessels—arteries to bring in the blood, and veins to carry it out again when it is done with. And now you will conceive how the nervous apparatus is kept going—observe, I did not say "set going;" the causation of that phenomenon rests with God himself—the Omniscient Creator! The essence of life will probably never be known to man in his present state. All that we are permitted to know is, that "God breathed into man's nostrils the breath of life, and he became a living soul.".

It is only the conditions of life that we can know, and one of these is, as I stated in my last Lecture, "the blood;" "the blood is the life," or the immediate stimulus of life—yet it is not life itself. The germ of life has never, nor will it ever, I presume, be discovered by man. Various seeds may be buried for thousands of years, and their germ of life shall be preserved and called forth when they are dug up and again exposed to the light and air. Wheat, from the ruins of Herculaneum—tuberous roots, from the sarcophagi of Thebes, where they have been excluded from light and air, have preserved their essence of life, and again vegetated, after a flood of ages have passed over the earth whence they sprung. Yet what botanist shall tell you the cell wherein that "breath of life," that "vital spark," resides? Some naturalists will tell you that life results from organization; now, without arrogating to myself the title either of naturalist or philosopher, I believe that, instead of assuming that life is the product of organization, we ought to begin at the other end of the chain, and say organization is the product of life. Thus we shall find "life" to be a direct communication from the Deity, and not a mere consequence of what is called "philosophical necessity," by Priestly and others.

To return, however, to our immediate subject—the consideration of the conditions of life, and of its various phenomena—sensation, motion, perception, and other powers of mind inherent in the nervous system of man.

The blood, stimulating the ganglion, calls up its latent powers, namely, those of receiving and modifying the impressions of the nerves connected with it; of generating from these impressions ideas, feelings, passions, sentiments; and of communicating these to other beings like ourselves by expression, consisting of gesture, air, and language. The instruments thus employed by the nerves, are the muscles, bones, and other portions of our frame, which we have previously examined. There is an analogy between this power in the nervous system of generating ideas through the agency of the blood, very like the electric, magnetic, or galvanic machines in generating the electric fluid, and exhibiting the phenomena called electricity.

I shall now proceed to shew you that my description of the nerves of sensation and motion, and their ganglia, whose office it is to receive, modify, and convey the impressions of the nerves, is not a mere fanciful sketch. It is unnecessary to describe the sensations excited in the body by receiving electric sparks or shocks, since most persons in the present day are familiar with them. It is curious, however, to take a retrospective view of the mode in which the effects of the Leyden phial were announced to the world on their first discovery. The philosophers who first experienced, in their own persons, the shock attendant on the transmission of an electric discharge, were so impressed with wonder and with terror by this novel sensation, that they wrote the most ridiculous and exaggerated accounts of their feelings on the occasion. Muschenbroek states, that he received so dreadful a concussion in his arms, shoulder, and heart, that he lost his breath, and that it was two days before he could recover from its effects; he declared also, that he should not be induced to take another shock for the whole kingdom of France. Mr. Allemand reports, that the shock deprived him of breath for some minutes, and afterwards produced so acute a pain along his right arm, that he was apprehensive it might be attended with serious consequences. Mr. Winkler informs us that it threw his whole body into convulsions, and excited such a ferment in his blood, as would have thrown him into a fever, but for the timely employment of febrifuge remedies. He states that, at another time, it produced copious bleeding at the nose; the same effect was produced also upon his lady, who was almost rendered incapable of walking. These strange accounts naturally excited the wonder and attention of all classes of people; the learned and vulgar were equally desirous of experiencing so singular a sensation, and great numbers of half-taught electricians wandered through every part of Europe to gratify this universal curiosity.

A Mr. Morgan states, that if the diaphragm be included in the circuit of a coated surface of two feet in extent, fully charged, the sudden contraction of the muscles of respiration will act so violently upon the air in the lungs, as to occasion a loud and involuntary shout; but if the charge be small, a fit of convulsive laughter is induced, presenting a most ludicrous exhibition to the by-standers.

Electricity may be administered medicinally in four different ways. The only general fact which appears to be established as to the use of electricity is, that it acts as a stimulant both to the muscular and nervous systems.

If I have succeeded in convincing you that my descriptions are true to nature, you are now acquainted with all that is essential to your perfectly comprehending the whole extent of our knowledge of the nervous system, as that contained in the works of every author on the subject up to the present year. I shall, therefore, now confine your attention to the nervous system of man, premising, that he passes through every type of nervous system exhibited in any of the other animals, from the first rudiments in the worm, till we arrive at the highest analogous type to man, in the monkey tribe; and to this God has added all those other parts of the brain which are peculiar to man, and constitute him a moral and reasonable being. This superiority of brain and nerves endows him with all the attributes we know of, and elevates him above all sublunary creatures. It, moreover, leads him to adore his Maker, and teaches him to look forward for the eternity of a second life—an aspiration in which he stands alone among all living things, and one which no sceptic, in the abundance of his imaginings, has ever yet had the temerity to assign to any other of God's creatures. That I may be clear when I say man possesses the type of all animals, let me state to you, that even man's stomach, like one animal within an animal, possesses as perfect a nervous system as is found in the earth-worm—it may, indeed, be almost called an animal; it has form, blood, nerves of sensation, motion, and organs of secretion. It creates new materials for life, has muscles to move it, and ganglia to direct its functions; and these, connected with the mind by means of the pneumogastric nerves, emanating from the brain. The liver would represent another animal; and, in short, our complex brain is built up by additions apparently comprising the types of all other animals, with further superadditions which no other creature possesses.

I will not trouble you to go over the form of the brain, or the additions it meets with in traversing the chain of animal existence, from the mollusca to the articulata; from these to fishes; from fishes to amphibia; from the latter to birds; from birds to the mammalia, and from the mammalia to man. I have said that the first nervous sensation in the chain of organization is an exercise of the sense of touch. Early in the chain we find other senses, such as hearing, smell, taste, and sight, added to it; a spinal chord, vegetative nerves, and to these other ganglia are added, till the brain arrives at its perfect hemispheric form (before described), and such as we find it in man.

Having got this length, our observations shall now be directed to the development of the human brain, and to deducing from the little we yet know of its phenomena, some rules for its management at different periods of existence. I must premise, however, that I am persuaded, if we had sufficiently employed ourselves in their discovery, there do exist as certain laws in animal physiology as in the other inanimate works of Nature which surround us. The harmonious movement of the planetary system, I am convinced, is not more regular, than are the successive laws of additional development of different parts of the brain, according to the economy of each creature — and if we would be contented with the simple philosophy of Newton in our speculations, we should have the best prospects of success. It is related of him, that whilst meditating on the simplicity and harmony of the laws which regulate the universe, he, turning his thoughts to the animal economy, said, "I doubt not that animal existence is governed by the same simple uniformity in its laws." Paley, also, in the following quotation, seems to be of the same opinion, for he says, "We perceive that God has been pleased to prescribe limits to his own power, and to work his end within those limits. The general laws of matter which govern this communication of motion, light, heat, magnetism, electricity, and probably of others undiscovered, have, perhaps, those limits." These hints, though they are but hints, are borne out in the examination of the simple type which characterizes each system in the organization of man and animals. In the arterial system, the first appearance of a heart is seen to be a mere pulsating vessel. The next step is a dilatation of this, in its centre, into a pulsating cavity or ventricle; then two cavities, as in the fish, an auricle and ventricle; then, as in the mammalia, a second ventricle, with another auricle, four cavities, such as we find in the most perfect animal — man. Yet the type is preserved, though additions are made to it. So in the type of the nervous system, we first see a single nervous thread, then a ganglion added; then another ganglion; but still preserving the original system of nerves and ganglia, even to the great hemispheric ganglia — the brain of man. In the embryo existence of human life, the nervous system of the fœtus, during its progression, passes through all the successive forms of the nervous system of all the inferior animals, still preserving the original type, and proving, as Paley says, "God has been pleased to prescribe limits to his own power, and to work his end within those limits."

You will find it useful, in order to go with me into the gradual development of the human brain in infancy, to bear in mind that, in the chain of creation upwards, each new faculty and additional function is accompanied by an additional ganglion to the nervous system, without alteration of the original type, which remains as before. So in the metamorphosis of the caterpillar, first into the chrysalis, and then into the butterfly, the ganglia, though apparently lost, seem only accumulated together for the convenience of having the brain brought into one compact or connecting mass; and if it has been necessary for the economy of any animal specially to perfect one sense more than another, you will find the ganglion larger in proportion to that sense. Thus, in the mole, whose power of vision is exceedingly limited, we find no optic thalmus nor ganglion of sight; for the little perception of light it has, seems to be made cognizant to it by a small twig of the fifth pair of nerves, which is usually a nerve of sensation.

Again, in the electric fishes, the battery with which they are provided is accompanied by an exceedingly large addition to certain nerves and ganglia; but still the type is observed, and it may be interesting to consider what kind of apparatus these fishes are provided with, to enable them to manifest such remarkable phenomena. The electric organs of the ray (the raja torpedo) are similar to a voltaic pile; whilst that of the electric eel (the gymnotus electricus) may be likened to a galvanic trough; in both they are a series of cells or plates, separated from each other by a gelatinous fluid, and in each cell the radiated termination of the nerves, which are branches of the fifth, seventh, eighth, or pneumogastric, are expanded, and we invariably find the ganglia of these nerves enlarged in proportion to the important offices which they are to perform.

There are many interesting reflections arising out of the consideration of the phenomena of these strange creatures—electric fishes; one I must beg to call your attention to. If you teaze these animals, so as to make them give out a succession of shocks, you exhaust their store, and they become harmless, and so harmless as to be handled; but if you keep them too long in your hand, the nervous power is renovated, and slight shocks begin to be felt. In the dead fish you feel no shock; therefore it is plain that it is not a chemical effect merely, but an animal operation placed under the control of its will. Well, then, it would appear the cells have the property of isolating the nervous or galvanic power, and collecting it like a coiled wire, till it is the animal's pleasure to let it off, and then he can make any part of his body the conductor. You will now begin to perceive, in the next remarks, why I have dwelt so long on this function. If by exhausting the nervous or electric power you weaken its energy, and if by cutting off the ganglia from the nerves, as Dr. Wilson Philip did in the stomach of the rabbit, and afterward, by the application of galvanism, the action of the divided nerves may be restored, it is certainly a fair deduction to say, that electricity has much to do with the functions of nerves generally, and may even be the proximate cause of life. If so, does it not follow, in the education or employment of any part of the brain or nervous system, that if you fatigue too much its power, you are likely to disturb the equilibrium of the whole body. These latter observations will show you, that my comparing the nervous system with this apparatus is not altogether fanciful.

In experiments with the galvanic trough, you must wait till an accumulation of electricity has been formed before you can obtain the shock. In the human nervous apparatus, if you exhaust the nerves too much, they become powerless, and "tired nature's sweet restorer—balmy sleep," or perfect rest, is the condition for a renewal of their activity.

And now let us go to the consideration of Education, examining, as we proceed, the state of brain and body to be educated.

What are the first phenomena of life we observe on the human embryo, when the chain is severed which made it dependent on its mother; and what now makes it an independent living machine? It expands its lungs and utters a cry; the valve between the two ventricles of its heart, necessary in fœtal circulation, closes, and gives to each half of the heart a separate function, and the circle of circulation dependent on their combined powers is thus completed for the first time. What takes place in the brain? The ganglion of respiration is called into action; its dominion over the chest and lungs begins; these are connected by their nerves with the spine and heart, and all the dependent viscera. Light falls on the retina, and the optic ganglion is called into use. Sound on the ear, even by the infant's own cry, and the auditory ganglion is excited; the sensation of touch is called forth by some external object, and the new creature feels; the olfactory ganglion is excited by odour (perhaps later than the others); and now for the first time is brought into operation the instinctive power of the brain, the desire for food—the first desire we express, and one of the last which leaves us. I have described the ganglia of the senses and their uses; cannot you now imagine the ganglia of hunger to be at work? The sucking of the infant's own fingers sufficiently demonstrates the instinct for food which is now awakened; its natural food is next supplied—it tastes, and now taste becomes educated, so that at last it chooses to take or not to take different food, and here is the first dawn of volition in that mind which, in its after existence, is to testify, by its wonderful properties of perception, memory, judgment, and reflection, the incomprehensible greatness of its Author!

Thus, first the corporeal power, then the mental powers, are successively brought into operation. The nerves excite the ganglia of the senses, and awaken the instincts; the ganglia communicate amongst each other by the commissures that unite them; and, lastly, the higher ganglia contained in the convolutions of the brain commence their operations according to a certain order, which it is now the proper time to examine.

But we must make a short digression, to consider some of the mother's instincts also, now awakened by her new arrival—the infant. All the mother's cerebral powers seem now to be concentrated into one focus—her love for her child, philoprogenitiveness, as it is called—her love for her offspring outstrips every other love; and this pleasure is wisely ordained to sweeten the manifold toils she has to undergo in the preservation and education of her children. Every consideration for a time gives way to this propensity, as many a poor neglected husband can testify; and we come now to a secret which I must whisper to papas. Mothers are disposed to spoil their children, to indulge their own feelings, and here is the first blow I mean to give to irrational early education. The child cries—the mother very properly feeds it; but it cries again from some other impulse—the mother again feeds it; so that at last, crying, and feeding, and sleeping, follow each other continuously. What is the consequence? It is fed after this, through ignorance of its other wants, a great deal more than it requires; it finds, if it cries, it can always get something by crying, and as it gets older, every impulse of its dawning mind is ushered out by a cry; the mother seeks to gratify her child in the usual way, instead of endeavouring to understand its different cries, and attempting to call forth more pleasing instincts. I said, and I know I was laughed at for my pains, that education should begin at our birth. But who laughed? Those who did not know the meaning of education, and for their edification, let me tell them it means, a bringing forth, a bringing out; and is derived from the Latin word *educo*. Education is not the creation of a new faculty, as many seem to imagine—it never yet created a single faculty of the mind; so that I shall still maintain, that "cultivation," if you prefer the word, "should begin with our birth, continue through our life, and terminate only with our existence here."

And now I will give you the results of some experiments, made by a friend of mine—a medical man and a phrenologist. He says, "My attention had been for some years drawn to the circumstance of the rapid increase of the infant's brain in the first few weeks after birth, and I determined, the first good opportunity I had, where prejudice did not oppose me, that I would measure the circumference of the brain, and the distance between the orifice of the ears across the head on birth. An opportunity occurred in my own house, on the 23d November, 1837; and the following are the results of a careful weekly admeasurement, from the day of birth to February the 4th—a period of seventy-three days:—

	NOV.		DECEMBER.				JANUARY.			FEB.	MAR.
	23	30	7	14	21	28	4	11	18	25	4
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Circumference of the head..	13	14	14	14¼	14¼	14½	14½	14¾	15	15	15
Space between orifices of the ears...............	7¾	8	8¼	8¾	8¾	9¼	9½	9¾	9¾	9¾	10
Around the chest	13¼	13½	13½	14¼	14½	14½	15	15¼	15¼	15	15½
Length of body	19	20	20	20	20	20¼	20¾	21¾	21¾	22	22
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Weight of do.	8	8½	9	9¼	9½	9¾	10	10½	11	11	11

Increase of next month, all but two days, namely, from

	JAN. 25 TO FEB. 22.		MAR. 23.	3 MONTHS.
	In.	In.	In.	Increase of In.
Circumference of head	15	15¼	16	3
Across top of head........	10	10	10	2¼
Around the chest	15½	15½	15¾	2½
Length of body	22	23	24½	5½
	lbs.	lbs.	lbs.	lbs.
Weight of do.	11	12½	13½	4½

What are our inferences from this table? First, That the brain increased more in size the first week than any other part of the body; that it increased in size, during the first three months, three inches in circumference. The increase in the respective regions, namely, the perceptive, reflective, moral, and animal, were in this order—first the perceptives were seen to come forth, then the reflective, then the animal, then the moral. After this, and during the next six months, we noticed the onward movement to be in this order—the reflective, the animal, the moral, and then the perceptive; and with the jetting forth of the ears by destructiveness and combativeness, we had evidence enough of what we had never seen before, namely, passion or temper, as it is called, at opposition, even to striking, of the offending object. Lastly, this seems to have given way to reflection and perception, and there is less temper; a great fondness for dolls and living things; a great aptitude for self-amusement and experiment, and with them a greater anterior development of the cranium."

Such, then, is the preparation Nature makes in the receptacle of impressions and the seat of thought—the brain, for the creature which begins a new existence at its birth, and is to be made acquainted, through its brain, with every thing around it. Is there no training, then, necessary during all these changes in the various portions of this important organ, corresponding with its increase? Ought no habit to be formed, so as to become the leading impulse of the mind? What is habit? The impulse to begin again, at certain and regular intervals, actions previously performed; and this is characteristic of animal life throughout the whole of its history. Fond as I may be of the study of the brain, and its uses, called phrenology, do not let me lead you to suppose that we have been left until the discovery of this interesting method of studying mind without rules for educating children and establishing habits—certainly not; but phrenology may do for education what the discovery of the compass has done for navigation. Without the compass, we know, that if we kept a certain course, according to our knowledge of latitude and longitude, derived from observing the rising and setting of certain planets and stars, we should arrive at the desired port; but the sky may become obscured by clouds—the stars be hidden from our sight, and then we trust to the compass and chronometer to steer us through the difficulty; and a knowledge how to use these have made navigation a science, accompanied by results which could not have been supplied by any other source. Now without phrenology, we have been told, "to train up a child in the way he should go, and when he is old he will not depart from it;" and wise and excellent is this precept, and likely to lead to the happiest results; though few, I regret to see, know the whole force and ultimate influence of this training up a child "as he *should* go," or the principle on which it is to be conducted, according to the physiological laws of the brain and infant mind.

To whom is the young brain and infant mind first consigned, in order to have its habits formed, its too prominent propensities subdued, its intellect brought forth, and its moral faculties trained to be the foundation of its future character? To the young, inexperienced, uninitiated mother, whose qualifications in music, drawing, worsted-work, and Poonah painting form but sorry aids in this her new duty. In the class above the middle grade of society, we commit the care of the infant to the nurse-maid, who can barely read and write, and she is chosen for the neatness of her dress, and the prettiness of her features; and in the step below this, to the unaided, young, poor cottager, who, with her new care, has all the former household duties to perform; she has thought it a very nice thing to get married, and so it is, where there is a good deal of love in it, and something more than love to warm the cottage and feed the children. Uninitiated and overburthened as such young mothers and nursery-maids generally are, from the causes I have mentioned, is it to be wondered at that infants are badly fed, badly nursed, and badly managed, mentally and bodily, and that bad habits, or an utter indifference to all settled habits, results, and the schoolmaster has to do what the mother or nurse ought to have done before? I never think on this subject without admiration for those philanthropic beings who are engaged in the establishment of public infant schools for indigent children, where Christian instruction, habits of industry, and morality are taught them, even in their play; and the big tear will come, in spite of myself, when I see their little evil propensities tenderly repressed, and love and affection to their God and to their teachers springing forth, and offered to their Maker in those shrines of artlessness and innocence! Surely such benefactors to the rising generation will have "their reward."

But I must not indulge in these digressions, seeing I have so short a time, where a week would be necessary to treat such subjects in a manner commensurate with their importance. And lest I overrun the utility which I intend should be derived from this Lecture, by those who are, or who may be parents, let me illustrate the first step in the management of the infant mind. I gave some general directions on the management of the infant body in the last Lecture, and what I then said on air and ventilation, will suffice to put those who have the management of infant schools on the alert, lest, by crowding them too thickly together, they commit an injustice to the parent who has been induced to intrust her child for safety and cultivation to the care of the public infant teacher. I said, in my last address, that infants should sleep alone, properly defended, of course, from cold and draught. I now say, that infants should be put to bed awake, and should not be rocked till their brains are addled, and then be cheated out of the nurse's arms into a cold bed, to be frightened to death when they awake, by discovering the fraud practised upon them by those on whose honesty their little affections depended. What is the result of this foolish practice? As soon as their eyes are open, they are alarmed at finding themselves alone; they cry in terror; and then they find that crying will ensure their being taken up and fed; they are fed and rocked again; they wake soon again, and are fed and rocked over and over again, till they are sufficiently stupified. This is a nice method, truly, of supplying the cravings Nature has set up in their brains for that varied knowledge which is indispensable for the part they are destined presently to play on earth. I fancy I can now hear some mother say, "Well, Mr. Lecturer, if this is not a good old plan, suppose you give us a new and a better one." I will try. You will, in the first place, please to bear in mind, when an infant has been given you, that you are entrusted with the important duty of bringing forth for good the inherent qualities of its brain and mind, in order that it may inform itself of the "physical properties" of the world around it; that it may, through the blessing of God, learn the laws of its Creator, live to obey him, and seek the happiness of His presence in the world to come. You have "to train up your child in the way he *should* go," knowing that "when he is old he will not depart from it." You are, therefore, now invested with a duty, not lasting a week, a month, or a year; but running through a period perhaps of twenty, or even thirty years. You are not permitted to enjoy your infant solely as a plaything, given for your amusement; for with it comes an awful responsibility—a responsibility which, were it not for the love that accompanies it, would be a burthen no one would seek to bear. You ought, therefore, to ask yourself, if you know the animal laws of your little stranger; the laws of its corporeal frame, which I have treated of; the laws of the early development of its faculties, of which I have also slightly treated. Its eye has not yet been made familiar to light—caution must be used lest the bright glare overpower the delicate nerve of sight; its ear has scarcely heard sound—it ought first to hear tones of softness and melody, the tender sounds of affection and sympathy; its nostrils have not been accustomed to strong odours—odoriferous bodies must be cautiously admitted to it; its touch is delicate—roughness may convulse its little nerves; its taste is also very delicate, hence strong or stimulating things should not be allowed to enter its mouth; so much for your consideration of the senses. Then its food, its clothing, sleep, air, and exercise, all of which I have touched, and with all of which it is necessary for the young mother to make herself perfectly acquainted, before her duties can be properly performed in the bodily culture of her offspring.

Then comes the knowledge of the mind, and its laws of progressive development, the manifestation of its primitive faculties; and here I might boldly affirm, that if phrenology had done no more for mankind than classifying and defining the faculties peculiar to man, independently of localizing them, it deserves the praise of all those who, till its dawn, must have waded through the ponderous and confused writings of philosophers and physiologists, who had but here and there a ray of light to lead the pilgrim on, in groping his "weary way" to the temple of knowledge of his own mind. But what advantage can the young mother derive from making herself acquainted with the progressive development of her offspring's mind? I will tell you; she will learn that the brain is the instrument of its mind—the seat of the living principle—the temple of its immortal soul. That in the development of its powers, Nature has established a certain order, and according to this order its education must be governed; that it has faculties, perceptive and reflective; it has feelings, sentimental and moral; it has propensities, good in themselves, but, from man's fallen nature, evil often in their tendencies and abuses, and requiring correction and pruning in the bud.

And now comes the important question of all, answerable, satisfactorily and physically, only by a knowledge of the brain.—What faculties are first developed? Shall we turn over some of the pages of the great book of Nature, into which we are taught by Holy Writ to look, and see if we can get any assistance from observing the offspring of inferior animals, whose economy, by being simple, is of course more easily read, and is, as we find written by the Great Master himself, in the same language as our own? Shall we look at the lambs around us, and what do we observe? The peculiar note of the mother's bleat is answered by the Lamb—the affection of the dam is responded to by the tiny, plaintive note of help and attachment; it seeks its mother's side. Then comes forward its first instinct—it gratifies this, and then regards the green carpet spread around it, and it dances, though stifly and awkwardly at first, over its surface, in little circles, bounded by its caution not to stray too far. Attachment, perception, the desire of food, and caution, then, are the first faculties called into play through the medium of its senses. This latter faculty—caution, is one of the most prominent in the infant skull; and the other—attachment, is nearly as large, though not so isolated; and the remainder—the perceptive faculties, are full, and more prominent than their neighbours in the same degree. The infant's muscular energies are awakened also; it likes motion, and begins to balance its spine, and lift its tiny arms, smiling as it sees the dancing objects which appear to move up and down before it as it is tossed in the air by its nurse. Thus you perceive infants make acquaintance with the external world when only a few weeks old, through their senses and perceptive powers, and by degrees they learn to distinguish their nurse or mother from others.

They are aware, by different persons producing different impressions on their perceptions, that two persons are not alike; and when they find that the same person produces the same impressions every time, memory tells them they are the same, and, as soon as they are aware of a return of the same impressions, a smile of recognition ensues. When they become attentive, and can direct their eyes, we may exercise their perceptives by different objects; and what do we ensure by this? an action in the front of the brain, which, by being continued, produces fatigue and sleep; and hence power—power from the law I explained in a former lecture, of healthy exercise being followed by increase of strength in all our faculties, to a certain period, whether corporeal or mental. The brain will increase by being used, and will diminish by being kept in a state of inactivity and idleness. In the early education of young children you should supply food to certain feelings and perceptives, in order that the reason may find the magazine full, when it comes to apply to it for assistance in forming its judgment. You will ask me, What are the feelings we should educate, and what the perceptive faculties? For a further explanation than I can give you here, you must consult phrenological authors. I can but give in this place their name, their objects, and abuse. The feelings are, first, attachment, caution, and benevolence. The perceptives (ministered to by the external senses) are individuality, form, size, weight, and colour—locality, number, order, eventuality—time, tune or melody, and language.

But to return to the education of the feelings—and here I must refer all mothers to a little work, called "The Education of the Feelings," which may be obtained of all booksellers; it is published at present without the author's name, but when it gets a name, the author, I dare say, will not withhold his. What is the object or aim of the feeling of attachment? Affection for those around us—hence, friendship, society, parental love. Its abuse—inconsolable grief for the loss of parents, relatives, and friends, and even of the lower animals—our pets. Its anactivity renders an individual careless for others, undutiful to parents, and unmindful of friends. But how are you to educate this feeling to a proper extent? By regulating in some measure your own philoprogenitiveness, or love of offspring, which induces you to attend to the wants, and minister to the comfort, of your children; and which is the cement which binds the parent to the child, whilst attachment is the cement which unites the child to the parent. And can so precious a gift from the Almighty, which he has lent to the mother to sweeten her cares and to ensure her duty, be abused? Unhappily, many a "spoilt child, granny reared," can testify this. What are the effects of overweening love of offspring on the child? The establishment of uncontrollable self-will, regardlessness for parents, the abuse of the fifth commandment, and disrespect for all.

I often think how accurate and expressive are the common words, especially those derived from the Saxon—a "spoiled child," is a child spoiled, or marred, or corrupted; and so it remains corrupted for life, the the pest of society, a curse instead of a blessing to its parents.

Mr. Quick and his spoiled child.

"Little Quick" had a "treasure," namely, "one fair daughter, which he loved passing well"—too well! It followed, then, that she was in infancy so humoured, petted, and "spoiled," that in comparison with her wild and whimsical desires, the famed requisition of the "top tile off the chimney" was a moderate and justifiable demand.

One day, a friend "dropping in" upon Mr. and Mrs. Quick at their dinner hour, found these fond parents and their "treasure" already seated at table, although the dishes were yet covered. The hospitable couple insisted on their friend's participation of their homely meal; and he, in compliance with their wish, took the fourth side of the board, immediately opposite to the young mistress of the house (then about six years of age), who, by right of custom and her own sovereign will, chose, day by day, whatever position, caprice, or local speculations connected with certain edibles pointed out to be most desirable; and there the high chair of the little despot was ordered to be placed.

On the present occasion, having forestalled her dinner by eating a lump of cake, which had palled her appetite, and rendered the present meal an unwelcome superfluity, the little dear was seated next to her doting father, as a mere looker on. The main dish upon table, when uncovered, excited the curiosity of Miss Quick, who either had not seen the joint before, or had forgotten the name of it, which she now eagerly demanded; and upon being told that it was a saddle of mutton, she stood up, and promptly announced her intention to ride upon it forthwith.

To this preposterous recreation, the parents were fain to entreat the little imp's forbearance. In vain; for she declared saddles were made to ride upon, and to ride she was resolved. After much ado, her patient father and mother luckily suggested that the obvious heat of the seat she aspired to, and the inconvenience likely to arise from such exercise, would distress her, and spoil her new frock, the difficulty seemed surmounted, and the child desisted from further importunity; but immediately after, perceiving the dish almost overflowing with the juice of the mutton, she cried out, "Oh, let me put my foot in the gravy! I will put my feet in the gravy." The father, albeit, not unused to such eccentric fancies, was a little startled at the sweet pet's novel desire, and exclaimed in a tone of assumed wonder and of deprecation, "My precious love! what a preposterous thing you propose! it is quite out of the question. Now be a dear, good child, and let me help Mr. Smith to some mutton." "Oh!" reiterated the little treasure, "I will put my feet in the gravy first."

In vain the devoted parents argued, threatened, and coaxed; in vain promised that the next day, when they were without a visitor, she should do whatever she pleased; all, all in vain! for, upon a more determined opposition, the sweet little angel yelled out her wishes in such a piercing key, that her mother, a very mild mannered person, addressed her husband, "My dear Mr. Quick, I'm afraid we shall have no peace until we allow the dear child to do as she likes." "Well, but my love," urged Mr. Quick, in reply, a little ashamed of their mutual weakness before their guest, "What will Mr. Smith say to such a proceeding? it is really so improper."

Mr. Smith, willing to see to what extreme parental folly could go, withheld both his opinion and permission, preferring a state of neutrality; and Mr. Quick, finding the little tyrant's determination warmer every minute, and the mutton cooler, proposed a compromise, namely, that the little darling should have another dish brought in and placed in a corner of the room, with some of the gravy in it, and then paddle about, whilst themselves and friend were at dinner, and return to the table when the fruit came in. No; the "treasure," at the very top of her voice, once more declared that she would have the dish, and nothing but the dish, before her; and further, that she would not abate one drop of the gravy.

At this perplexing juncture, Quick turned towards his friend, in apology for the scene before him, assuring him at the same time, that "it was of no use to thwart the dear child, who would have her way." Then calling for another dish, the poor father placed the shivering saddle upon it, and lifting that from the table containing the gravy, carried it to a remote corner of the room, where he was followed by the "little duck," who, after a persuading kiss from the goose, her father, consented to have her shoes removed, and to remain splashing about until the dessert appeared upon the table. When the little nuisance graciously allowed her foot-bath to be taken away, she re-ascended her high chair, and there further showed how hateful lovely infancy may become from improper indulgence, by pushing about and knocking down whatever was offered that she did not approve. Screaming forth her preference, she at length declared in favour of a large pear, the largest in the dish, upon which she had placed her affections Mrs. Quick, unwilling to incur by fresh denial another contest with her powerful superior, with prompt kindness smilingly placed the coveted pear upon her daughter's plate; when, to the alarm of the beholders, the little fury threw it back upon her mother, with all the ferocity of a full grown termagant, exclaiming, as she did so, "Why did you give it to me? I wanted to snatch it."

How shall we correct, then, this first general error in the education of our children? By considering that the child is very early in life more cunning than it is believed by parents, and that it will *feign* a cry of distress, to obtain the gratification of a desire, well knowing that its fond parents will yield to its apparent distress, and which it knows they always have done. Let us correct early the little temptations to do amiss, by a deep tone, and an expressive look of disapprobation; let us not overlook any bad propensities, but observe them, and reason on their effects, the consequence of delaying correction, and indulging dangerous tastes.

Chide with kindness, according to the sensibility of your child, obtaining compliance if possible from affection; if this does not succeed, direct the mind as quickly as possible to other thoughts; if the young urchin returns to the charge, be firm and unyielding, and never forget that his first battle, terminating in his favour, like the first battle after marriage, determines the relative position of the parties throughout after-life. I must, at this step, again refer you to anatomy, as the base of my opinions on education, and the basis of your belief in the truth of them; for if I do not establish this foundation, you will leave the room with impressions that will not last. I have told you that, in the history of the infant, certain of the propensities and certain of the perceptives are first developed. Now please to bear in mind, that the propensities are propellers or movers of the animal machinery; whilst the perceptives produce general quietude, or a passive state of the body during their operation. Now if in your children the propensities are *full*, in phrenological language, or *manifest*, in common language, you must expect that there will be inherent in them a desire to act. We will suppose a case; say combativeness, or destructiveness, are prominent or manifest by passion, and the destruction of toys, how will you correct the continued desire in those feelings to act? By engaging the perceptives, or, in ordinary language, amusing the mind. What physical change do you produce by this? You call up attention, and, with it, the circulation of the blood to the front, instead of allowing its impetus to be spent on the back part of the head; and thus you change the action of the brain. Now suppose you continue thus to act on your child for a series of years, what is likely to be the result? An enlargement of the front, and diminution in proportion of the back, part of the brain; and that this change does take place, many instances might be adduced to prove, both in early and in middle life; but it is very difficult to get at facts of this kind.

Now for an example, in adult man, of what I have endeavoured to show occurs in children, namely, a disposition to act in the propensive organs. We will suppose a man, in easy circumstances, with large propensities of courage, destructiveness, and firmness, also a large cerebellum; say he is a farmer; or, if not, that he is at least acquainted with rural life and sports, and has not a strictly intellectual occupation; will not those propensities seek some means of gratification? If we were at war, they would seek employment in the army; if at peace, they would be very likely to seek the amusement of hunting, or shooting, or racing. Suppose all the animal propensities of all our British youth were to be subdued, and the English were to be educated intellectually only, how soon would this island fall a prey to the ferocity of her enemies! It is the reasonable and proportionate excitement of those propensities in relation to, and in relaxation of, the intellectual organs, which is recommended, and not their abuse. If you pen up those powers, when they exist to a considerable degree, what would result? The bottle would burst, and we shall have those out-breakings, that occasional ebullition, though of short duration, of which it is to be regretted we see too many lamentable instances in every community.

I will illustrate what I mean, by the example of a schoolmaster, who was fond of the flogging system, and was also passionately fond of fox-hunting. No forenoon passed that he did not contrive to have a few unhappy wights to flog, and lest the fatigue should be too great, he always took a hearty lunch before he began the flagellant education, and then it was horrid to see the delight and grimace he exhibited at every stroke! But on hunting days, when he made his appearance in boots and smalls, the boys knew there would be no flogging that day—he was going to let the steam off another way. As the bottle burst, he became the mildest creature in the world. His stormy brow brightened up; there was not a bad lesson said, and all went on marvellously smooth—"merry as a marriage-bell;" and if he had a good day's sport, the effect lasted for a day or two; but at length the clouds gathered; again the cane plied, and dulness, stupidity, hatred, and revenge reigned in the minds of the boys, who, perhaps, as long as they lived, never lost bad feelings which, but for this cruelty, would perhaps have remained dormant for ever. Nor is this example of the schoolmaster a solitary instance of the improper mode of indulging propensities, which, if they must act, had better be provided with a better channel. Happily for timid boys and tender parents, the flogging system is on the wane, and parents and schoolmasters are becoming more rational beings.

There is a class of beings which has puzzled, and continues to puzzle, the world, by contrariety of principle and practice, and which naturally fall under our own consideration, morally and phrenologically—I mean that nondescript creature a genius, whom we see at one season uttering "thoughts which breathe, and words that burn," exciting our wonder and almost reverence, and at another time immersed in scenes of vice, and mentally obscured by debauchery.

The Shakspeares, the Byrons, the Bacons, the Sheridans, the Burnses, and other bards, may illustrate my position. What explanation shall we give of such characters? That their organization is made up of large propensities, and also large intellectual organs—vessels without rudders. They alternately indulge their propensities and their intellectual endowments; and hence their contrariety of character. How many masters do I now address, whose most talented workmen will drink for weeks together, and then return to their avocations, exhibit their wonted talents, continue steady for a time, and then again lave their powers in the fascinating and obvious waters of dissipation.

Some, like Owen, have contended, because they have seen a revolution bring a Buonaparte to light, that circumstances create talent, mistaking, as they do, the nature of talent, and the utility of the propensities in giving vigour and energy to intellect.

Moralists very naturally and properly regret that Shakspeare was a poacher, Linnæus a satirist, Byron a debauchee, and Burns dissipated. These things are to be regretted; yet, except for such circumstances, we might never have had the advantage of their works, nor such lamentable examples of the weaknesses of ill-directed, unreclaimed nature. But for what purpose do I introduce these things here? To impress your minds with the necessity of appeasing the cravings of passion by moderate food, as well as indulging the intellectual appetites. Marriage and manly exercises will quiet the one, and intellectual pursuits satisfy the other. On the other hand, the intellect too much employed produces imbecility; and passions too much indulged destroy the memory, prostrate the intellect, and tantalize the feelings.

King Alfred, one of the greatest characters the world ever produced, divided his time into three equal proportions; one he employed in sleep and renovating his bodily powers by diet and exercise, another in the despatch of business, and a third in study and devotion. Bodily exercise and temperance will be the best means of controlling and subduing the propensities, giving at the same time rest and renovation to the intellect. Study and devotion will best educate and enlarge the intellectual and moral nature of our minds; and we shall see, in the sequel, that religion is as essential to a state, in order to produce moral government, as temporal laws to ensure a political one.

Schoolmasters.—If I have been compelled to make some observations on schools and schoolmasters, let me endeavour to set myself right with these important people. Perhaps no position in society is more difficult to maintain with success. If every pupil does not become brilliant, weak parents blame the master, and not themselves. If the child takes a dislike to his school, he is instantly removed, without examining into the merits of his complaint. When parents take their children to school, they presume to instruct the master as to what his plan should be. If a boy is punished, the indulgent mother pesters papa to take him away; and did you ever know a woman not succeed, if she were bent on this or any thing else? If he is rude at home, it is the master's fault. So that the poor master is kept, particularly if he keeps a conscience, or feels a sense of duty, to use a homely phrase, "like a toad under a harrow," afraid to move lest he gets another pierce, and yet urged to action by the painful position in which he is placed.

Delighted with his success in some particular boys, he is just beginning to plume himself on his talents, when, from some caprice, his favourite pupils are taken away and removed to another school; nor is this change less injurious to the poor master's interests than to the boy's welfare. The boy now discovers that all the habits he had formed are ridiculed by his next teacher; he is put back to new studies, and the mind is constrained into a new round of habits. Do you not think the brain feels this, and the self-esteem his progress had in his old school given him is pained? Perhaps as soon as he has got fairly into harness, he is a third time removed, from as trifling a caprice, and then the time has arrived when he must go to business. In common language, "three removes are as bad as a fire;" and almost as bad as a conflagration to a man's goods, is the confusion of intellect by this practice in his child.

The uprooting of habits the mind undergoes by these changes is often very bad. An independent schoolmaster, whose intellect is above the common grade, will often have but a small school, whilst the pedagogue who "boos and boos," like Sir Pertinax Mac Sycophant, to every caprice of weak indulgent parents, will be a very "nice man," with an overflowing complement of boys. How important is it, then, to distinguish betwixt the charlatan and the honest master, and how necessary to pause before you break up a boy's habits — the result of years, by removing him from a good school from mere caprice.

Cheapness is the order of the day, but I wish every Squeers had a Nickleby, to expose to weak parents the absurdity of treating schoolmasters like shoe-blacks, and pushing into obscurity talent, principle, and modest self-conviction of surpassing acquirements. Foreign fiddlers and players are the companions of nobility, whilst the men who labour at the hardest and most important mental avocation, the instructing of youth, often pine in neglect and penury.

Men of first rate talent, for the want of those occasions which give celebrity to worth, have been but little known.

> "Full many a gem, of purest ray serene,
> The dark unfathom'd caves of ocean bear;
> Full many a flower is born to blush unseen,
> And waste its sweetness on the desert air."

I must now condense what I have to say (or rather what time permits me to say now), into a mere bird's eye view of intellectual education.

I begin by saying, Study the character of your children dispassionately, if possible. Study phrenology, as the best assistance you can have in learning the probable powers of the future man. Make your children moral, rather than intellectual; and do not depend on intellect for moral conduct. There is a something given to man which those only can define who study christianity — which is a far better foundation for happiness than all the boasted display of intellectual brillancy.

The clergy have, I know, looked with suspicion on phrenology, and they have done wisely, for why should they yield a certainty for what they may have believed to be an uncertainty, at least, till the knowledge of the brain, the instrument of the mind, should be so advanced as not to deceive their expectations. They have seen false philosophers and false prophets. They have seen a humane but mistaken man, striking at the best foundation for peace and harmony in society, and making phrenology the stepping stone to prove that man is irresponsible and fated by circumstances. They have found others leaving out of their systems of ethics and psychology, Christian principles, and even the necessity of an atonement. Nevertheless, although phrenology is not yet perfect, has uttered errors, and has been perverted, like chemistry, poetry, painting, history, and physic, to bad purposes, it is still the best guide to a clear comprehension of the philosophy of the mind, omitting, as I am convinced we had better do at present, the explanation by its aid of the mysteries of religion, which rest not on physical, but on other and higher foundations.

I shall be compelled to commence the next lecture, on moral education, with some subjects omitted in this discourse; but your indulgence and long patience this evening, give me an earnest wish to endeavour to put this most difficult and delicate subject in a position intelligible to my junior hearers; and, if I possibly can, comprehensive and interesting to all.

LECTURE IV.

MORAL EDUCATION.

LADIES AND GENTLEMEN,

I have demonstrated to you, in the first and second Lectures of the present series, that bodily education can never be thoroughly understood, nor can ever be established on a lasting foundation, unless its principles are based on a knowledge of our own structure — human anatomy.

In my last Lecture, I think, I likewise induced a belief in your minds that a knowledge of the brain, its gradual and progressive development in youth, and its decline in age, are essential in a system of education, in which we first aim to perfect its intellectual vigour, and then to control its powers, in a manner to make man good, and happy, moral, and I was about to say, religious; but that blessing must, I believe, proceed from an especial infusion of the Holy Spirit into our souls by God himself, inspiring us with the hope of a happy eternity through the atonement of our Saviour Jesus Christ. I believe no man can become religious by merely being intellectual and moral.

But unaccomplished as our intentions generally are, in the last discourse I was only able to give you some account of the intellectual faculties and their cultivation, leaving, for this evening, the most essential of them, and concluding with the moral condition of the brain, the last in the catalogue, though the first in point of importance.

In order to renew the impressions of the last discourse, and to link them with the present, I shall repeat to you, that the infant mind unfolds itself by first exhibiting an activity of the senses of touch, taste, hearing, sight, smell, and then its instinct (as it has been called) of hunger is shown; the exercise of its respiratory organs and heart, of course, precedes this, and its digestive organs are called into play in order to form its own blood. Its perceptive organs come next, by which it perceives and knows some of the things around it, such as its nurse or mother; thus our first ideas reach the mind, and are treasured up by the memory, till the reason is so far matured as to employ them in its judgment, which is the concentration of all our faculties. You see, then, how regularly our mental endowments proceed; in what exquisite order the Great Designer of all has called into existence our intellectual powers, according to our necessity for their exercise, in our early acquaintance with things around us — with the "physical properties of bodies," and hence our intellectual education.

I divided the brain, in order that you might begin its study with clearness, into three portions, corresponding to its anatomical division, and made by early anatomists, namely, the front, middle, and posterior lobes; which division phrenologists classify into the perceptive and reflective region in front, the animal and impelling region behind, and the superior and moral part above. The two former are given to the higher brutes, but the latter one distinguishes man, places him above them, and endows him with moral sentiments, with a conception of the goodness, the greatness, and eternal existence of his Maker!

Now as man proceeds along the walk of life, along the path destined to his species, changes in the relative size of these parts of the brain take place; and you will now, I hope, perceive the harmony of these changes in his brain, from the knowledge you have gained of the history of his mind. In early life you know perceptions take the lead, the appetite for knowledge is unbounded and insatiable; and wonderful is the amount of things learned during our youth. The passions then come into play; the combative, the destructive, the social, the parental. As we proceed, the moral feelings dawn — hope, truth, and mercy; and in manhood these are combined with the intellectual powers, to make man a reasonable and a moral being.

It is still more remarkable that, in the same order as our faculties came to us, so, after lasting their given time, after, "fretting their hour upon the stage," in the same order do they decline. The senses begin first to fail; the taste, the sight, the hearing, and smell convey no longer to the perceptive faculties correct impressions of things.

The perceptive faculties themselves become weak, the memory fails us, the reflective faculties are thrown on the recollection of former years, and happy is it then for those, whose morning of life has been employed in gathering a store of ideas for the evening's consumption, before the night comes, the world recedes, and the light is withdrawn. The moral sentiments and the moral part of the brain remain the latest, for long after the senses begin to decline, and the forehead retires and becomes contracted, we see, with reverence, the old man's large silvery top; his harvest seems ready for time's sickle; we hear him admonishing the young; counselling moral conduct, justice, and self-discipline to the adult; and in his last moments we find him adoring and depending on the God who made him to take him to himself.

Such is the history of the mind. The body has its own corporeal laws, and observes them; the soul, unfettered, returns to him who gave it.

> "The one aspires to Heaven,
> Pants for its sempiternal heritage,

And glories in endless being.
The other, for a time, the unwilling sport
Of circumstance and passion, struggles on;
Fleets through its sad duration rapidly,
Then like a useless and worn-out machine,
Rots, perishes, and passes!!"

I said, that at different periods of our existence here, the different parts of the brain undergo changes in their relative size; and it is essential to your appreciating the inferences I shall draw from this fact, that I should explain to you, more at large, the nature and history of those changes. The changes themselves depend on a very simple law, which is this—where there exists excitement or irritability in a nerve or ganglion, or in any portion of the brain, thither will there rush an impetus of circulation; if this action be long continued, an alteration is effected in the calibre of the vessels of the part itself. I explained this law in speaking of exercise enlarging our muscles, bones, and vessels; hence the use of corporeal training to form our bodies. So, if you use any portion of the brain more than another, there will the increase of the circulation be felt, and a partial head-ache often result. Where do you find fatigue after mental application—after the employment of the mental faculties? Not in your feet; not in the back part of your head, but in your forehead. Attend closely to a speech, to a sermon, to a lecture, and you will find your face flush, your forehead become shot, and, at the conclusion, you almost instinctively rub your brow and eyes. If you forget any thing, even a person's name, for instance, you try to stir up your perceptive faculties with your hand to find it for you; many try to read it on the ceiling, but few expect to find it on the floor.

There is a circumstance of daily occurrence, on which I have often speculated, in the endeavour to find its explanation, and I think I begin to understand it now. I dare say some of you, like myself, have seen your neighbours go to sleep during dull sermons and dull lectures; and sometimes they nod assent so emphatically and so often, that you would fancy they approved of every word the preacher or lecturer said. How do you explain this? They often come long distances to lectures and sermons—to sleep; and if they meant to do this, it would have been a much shorter journey up to their bed-room than to the lecture-room. It may be, they hear a dull lecture or sermon, for such there are. "There may be no salads in the lines," as Shakspeare in *Hamlet* says, "to make them savoury," nor "no matter in the phrase, that might indite the author of affection;" but this is not all. Sleepiness often proceeds from the very attempt persons, with the perceptive faculties small and little exercised, make, to give attention to the lecturer or preacher; and this often provokes them exceedingly, and pains their good intentions; but the truth is, that in attending closely, they call up so much blood to the brain, that they overwhelm its vessels, and make it, in spite of themselves, lethargic—especially if they go to church, or to a lecture, after a good dinner; but I will be bound you never saw such a genius as this *(shewing illustration)*, or any one having his perceptives like those of my picture, go to sleep at a lecture or sermon, unless these are dull indeed.)—And very dull must that lecturer be, who expects his audience to confine their attention to him whilst he is harping on one string for two hours, boring them with technicalities; the mind cannot bear it; but let him vary the subject a little by suitable illustrations, relieve the perceptives by an anecdote, "put some salads in to make the dish savoury" and then even the poorest capacity can attend, from the relief you have thrown in to the almost cracking fibres of the perceptive brain.

SLEEPING IN CHURCH.—In St. Philip's Chapel, Winchester, there are ancient stall-seats, affixed to the walls of the ante-chapel. These seats are so fixed upon hinges, that those who sit in them can only maintain their position by balancing themselves with care, and resting their elbows on the seat-arms; so that if the monks who used them dropped asleep during divine service, the seat came forward, and pitched them headlong upon the floor; nay, if they only dosed and nodded the least in the world, the hard oaken seat clapped against the hard oaken back, and made a noise loud enough to attract the attention of the whole audience. Nothing was ever more cleverly contrived to keep people awake in church.

In explaining to you these things, have I not explained why boys hate schools? Why is the Latin Grammar such a bore? Because it employs only one faculty—verbal memory, whilst all the rest of the faculties are iotous for food. Look again at the children of your infant schools; do you ever find them dislike to go to school?—no, certainly not; they will cry if they are ill, and cannot go to the school, because they are amused as well as instructed; you employ many of their faculties at once, and hus engage their little active minds. But, again, if this is carried too ar, what is the result?—irritation and inflammation of the brain; and many a grief-worn parent has to repent his folly in making his child a prodigy—that child, which might have been the solace of his declining years, has been the victim of his vanity!

And now I have awakened your minds to this subject, let me tell you hat the brain grows at several intervals during youth, and that it is not t to work with at these seasons of growth, and will be destroyed by nflammation, if you persist in urging it on, when it ought to have rest. The brain of children is soft and delicate, and full of blood, like a sponge; ence prone to inflammation, for blood, you know, causes inflammation. The intellectual powers ought, therefore, to be unfolded by degrees, and lways in proportion to the development of the physical organization, or growth of the body. Whenever the brain is overworked, and forced into unnatural precocity or maturity, it is always, bear in mind, at the expense of the body. The vanity of parents is too often the destruction of children. If a child can be shown to be a prodigy, it matters not to them how feeble he becomes. If he can exhibit the fashionable accomplishments, and can recite Latin and Greek, though he cannot digest beef and mutton, what does that signify; he is astonishingly clever, and ability and capacity to eat and drink, to enjoy frolic and fun, are all vulgar endowments. There is a class of children on whom this fashionable folly is sure to fall with fatal force; I mean the children of scrofulous parents; for these tuberculous children generally display great sensibility and precocity of mind; proud hopes are raised in their ignorant and vain parents; intellectual distinction is sought for them; the tuberculous habit, through a privation of air and exercise, and an imperfect digestion, ripens into disease; and thus the youth, who shone brightest at the university, soon runs the briefest career, and leaves to his unhappy parents the remorse and anguish of having educated him to death! This is not an ideal picture, but one from nature; these evils are not the progeny of my imagination, but are drawn from the life; and I hope their exhibition will stamp on your recollection that the first and most vital point in the educating scrofulous or tuberculous children is, to develope their bodily vigour, so as to annihilate, if possible, this morbid tendency.

The aristocracy of England are too frequently constitutionally scrofulous and consumptive, and they make the matter worse by improper marriages; continuing this diseased organization, they perpetuate their degeneracy. The late Mr. Knight, of Downton, said, "Amongst aristocratic families quick men are abundant, but a deep and clear reasoner is seldom seen. How well and how ready the aristocracy of England speak, and how weakly they reason!" and I say, why should they not have the privilege of words, when they are taught only words, and not things? To show you how phrenologically that extraordinary man, Mr. Knight, reasoned; he says, "habits and pursuits, long followed in families, develope the organs from which they spring." He must have been a phrenologist, or, at all events, nothing could have been enunciated more phrenologically—nor, allow me to say, more philosophically, upon this subject. Perhaps, however, there is to this, as to all general rules, an exception, for I believe that public musicians generally marry musical wives, to ensure harmony, I imagine.

But, to return to the periodicity of the growth of the brain, during which I earnestly advise that study should be withdrawn. In my last Lecture, I gave you the measurement of the infant's brain, showing its rapid increase; and if you have reflected on this, you have already seen, in its progressive increase, the finger of an over-ruling Providence. In embryo its faculties were unnecessary—in that state they are dormant;

but as soon as the infant comes into the world it has to learn the new objects around it, and hence it is provided with appropriate faculties. The increase goes on gradually, alternating with the body; it has been observed, invariably, upon measurement of the growing skull, that whilst the brain had been increasing since the last measurement, little or no increase of the body had taken place, and *vice versa.* In after life, these alternate growths move less rapidly than in youth, or than we find from birth to twenty-five. There seems a pause from two or three years old to seven; then an increase during three or four months, and the child is dull and sleepy. But what of that, he has his task to get, and the dulness must be beat out of him!—head-ache and fever result. He gets through these changes, perhaps, then the body grows rapidly; he shoots up, and begins to stoop, because he is ashamed of being so tall. The girls, from weakness, fall into a habit of taking an easy but unnatural position; and then, from this improper posture, or too much use of one side of the body, as in drawing or writing, for the counterpoise of the other, their spines give way; they are then braced and bound to keep up their spines, and then the chest gives way. But, to confine myself to the brain; at fourteen or fifteen years old the brain and mind again make progress in development, and all the dangerous consequences may be renewed—lassitude, inaptitude to study, indulgence in bed, head-ache, hot forehead, and cold feet. But what of all this? The parent must not pay schooling for nothing! they must be made to fag, or they will cut a poor figure at the "breaking up day," says the schoolmaster. Then comes the favourite adage with schoolmasters and mistresses, "Birds that can sing and won't sing ought to be made to sing;" and, if I could whisper in the children's ear, they should answer, "Yes, ma'am, but birds don't sing when they are moulting." No; nature changes at that period, from the flow of nervous life to the building up of the body, and, for a season, appears to neglect the mind or functions of the brain, and a mental stagnation ensues.

Now comes the consideration of the last of the epochs, or third branular increase, which is generally from eighteen to twenty-one; and a most important epoch it is, for the brain that has been long excited by study or business. How many sad examples of the destruction of genius of the first water in the church, in the law, in medicine, in the senate, in the laboratory, in the arts, could we in a minute point out, all owing to ignorance of the true physiology of the brain at this period? How many Kirke Whites might we find amongst the votaries of the muses, who have perished at this period? You may remember how Byron laments poor White—

> "Oh! what a noble heart was here undone,
> When science' self destroyed her favourite son!
> Yes, she too much indulged thy fond pursuit;
> She sow'd the seeds, but death has reap'd the fruit.

"T was thine own genius gave the fatal blow,
And help'd to plant the wound that laid thee low;
So the struck eagle, stretch'd upon the plain,
No more through rolling clouds to soar again,
View'd his own feather in the fatal dart,
And wing'd the shaft that quiver'd in his heart;
Keen were his pangs, but keener far to feel,
He nursed the pinion which impell'd the steel;
While the same plumage that had warm'd his nest
Drank the last life drop of his bleeding breast."

I must now leave this subject, and proceed to the adult brain and adult education, first giving you some rules respecting the treatment of youth of both sexes at these important epochs. Of the first, which commences when teething is done, little more need be said, except that the mother's hand should often be placed on the child's forehead, and if too great heat, with flushing, be detected there, let means of subduing the circulation be resorted to. Let them sleep without night caps, on a hard pillow; never accustom your boys to that effeminate badge—a night-cap, and let your girls wear a net cap with meshes a pea can pass, if you wish them to have good hair and plenty of it. A man always looks like a buffoon or a molly-cot in a night-cap.

At the second epoch, namely, about seven years old, let the head be closely watched, and the hair kept short. If inaptitude for study comes on, let it be indulged, and music and the lighter employments engage the mind. At fourteen, a still more important epoch, let double care, double vigilance be employed. Watch the cerebral developement, and, if it is possible, let the youth travel either in his own country or abroad, where, besides getting health and vigour of body, he may pick up without trouble the foreign languages; for it must be observed, that languages are the instruments by which knowledge is conveyed, and are best obtained from the native mouth. That language is often mistaken for knowledge itself is true, and every useful information applicable to real life is too frequently sacrificed to a smattering of dead languages. It is better to have living ideas than dead languages, and it is astonishing how travelling seems to call the latent mental powers into activity. But there are many who have more words than ideas; hence they may be great scholars, but, at the same time, unable to afford us instruction; they are like "letter men," not men of letters. A monk may see a horse pass his cell, and may call him in Latin *equus*, in Welsh *kefel*, in French *cheval*, in Italian *cavallo*, in German *pferd*, but what does he learn in his cell of the "physical properties" of the horse himself. A good sharp stable boy would beat him hollow in the natural history of the "hanimal."

Girls, at this important period, should never be allowed to sit much. If they are weakly, in consequence of heat of the brain, and if lassitude of body exist, thin their hair and cool their brains; let them lie down, instead of sitting down. Attend at this time, particularly if they grow fast, to preserve their natural shape, and tie up, even for six months, the strong arm which pulls it to the weak spine, and thus throws out the right shoulder blade. You thus make them use the weak side till it becomes the strongest. The shower bath is an admirable means of giving vigour to the body and tone to the mind. I know of no such powerful aid in producing that necessary equilibrium amongst the bodily and mental powers as it; it is invaluable; and next in the scale is horseback exercise, with sea bathing, and brain holiday.

But of all the epochs, the most interesting is the last, in which the brain makes its final approach to maturity; it happens at about nineteen or twenty years, in some later, according to the temperament and avocation. Imagine the irreparable loss—the blank of after years; the dark chasm too often made in the fond parent's heart, which nothing left can repair, by the loss of a dear child at this epoch, the creature of all his fond imaginings—the rose bursting into blossom "nipped in the bud!" and all this deprivation, and more, he suffers from want of rational knowledge; in short, for want of knowing what we have just been speaking about, and which amounts to this—that the brain has its seasons of growth, and is not fit to labour during these seasons. Let every parent, let every youth himself, beware of this rock, on which so many a spirit "of gallant bearing" has foundered. Let blood be lost if flushing prevails; let every excitement be withdrawn; remember the former teething period; this is scarcely less dangerous, and requires the same treatment; for should there be a disposition to inflammatory action in the system, and this be fanned into activity, water in the brain and abscess will, without the utmost vigilance, result; and thus early maturing the brain has destroyed thousands.

With these remarks, I now close my observations on the corporeal or physical care of youth; his intellectual and moral culture remain to be considered. It may be said, that I do not give "rules for teaching;" this was never the intent of my efforts. I feel my incompetency to do this; but it results from my profession that I know, or should know, the laws of the human body and its physiology, and therefore I may be presumed to know something of the treatment both of body and mind.

Human nature, in every shape, has ever been my favourite study, and hence my attention to the education of body and mind has naturally followed. I profess to give correct principles, and not minutiæ of detail; for nothing would be so dull as to discuss the merits of different grammars, spelling-books, and dictionaries, before such an audience as this. If I succeed merely in drawing your minds to consider rationally for yourselves the true basis of education, so sadly misunderstood—the brain and body, leaving the details to the schoolmaster and moralist, I shall have fulfilled my intent, though not to the extent of my desires.

INTELLECTUAL AND MORAL EDUCATION.—I shall now confine myself to intellectual and moral education, and to some incidental subjects, in conclusion; and, first, what should be the aim of this department of education? To lead youth in the right path of life, to conduct him therein by a proper exercise of his faculties till he shall be capable of self-control, so as to be his own guide. This, at least, is my view of education. And how do we educate the poor, with whom, let it not be forgotten, the interests of the rich are inseparably connected in this country? I will tell you. Through ignorance, natural to their parents, they are first badly nursed, badly fed, and early habituated, whilst the mind is plastic, to vice, till its hideous face becomes a familiar object. As soon as they can earn a few pence a day they are put to some mechanical, menial, or agricultural employment, and this occupies their whole time, leaving scarcely a vacant hour for necessary recreation, moral and intellectual knowledge! Their natural passions and propensities early take the lead, and if their intellect lies uncultivated, and they grow up like brutes, they are treated like brutes; and independent and opulent people, who have leisure at command to cultivate what they please, exclaim at the depravity of the poor—denounce and despise them.

What does our government do for the cultivation, intellectual and moral, of the poor of this country? For the credit of England, I am ashamed to answer. What does the government do in France, even in Russia, in Prussia, in Sweden, in Germany? It provides public schools, public boards of health, and sources of public amusement; and do you find drunkenness and vice equally prevalent in these countries as it is in our own? Certainly not. With the abundant resources of our country, we must regret not to see the poor happier and wiser. We might see them moral—at least more so—if their early years were well employed, if time were found them for moral training, if, when their minds were young, they were inclined to virtue and to wisdom; and by the same means we might see them intellectual. But let it not be supposed that I am ignorant of the attempts now being made to produce useful changes in public education, which have been too long delayed through not considering that what is the people's good individually is also the national good.

It is an universal complaint that there are no good servants now. How is this? Their moral education is worse than ever. They did not formerly get their own living in manufactories, or early servitude, before their parents had morally instructed them at home; their becoming dresses proceeded from their own fingers—from their own spinning wheel and loom; and during this time their cottages were so many little communities, conducted on a simple and moral plan, under the watchful eye of a respected mother; and when they did go to service, their weekly return, or their Christmas assemblings under their own happy paternal roofs, around the cheerful guides of their early years, were pleasures sweet indeed. But if you want a better picture of this happy homely assemblage than I can draw, read Burns' "Cottar's Saturday night," and, at the same time, remember that this is still a picture of Scotland, that part of the kingdom from which you still get a large portion of men to fill your responsible government offices. If there is a good post, requiring moral duty, firmness, and industry, vacant, from a mendicity-man to a government-man, a Scotchman is sure to get it. Are they so rich in Scotland, then, as to afford their children better education than in England? Visit them, and see "the nakedness of the land." Then what is the secret? How do they gain "the pride of place?" By their early moral training, their industry, their self-control, their moral character, and a little assurance. Look at the picture the poet ploughman, Burns, gives you in the sixth stanza of the little poem I mentioned. The cottage parents are sitting round the fire in the midst of their bairns, admonishing the elder ones before retiring to their neighbouring masters, and the younger ones before they go to bed, thus,—

"Their master's and their mistress's command,
The younkers a' are warned to obey;
And mind their labours wi' an eydent hand,
And ne'er, though out o' sight, to jauk or play;
And O! be sure to fear the Lord alway!
And mind your duty duly morn and night!
Lest in temptation's path ye gang astray,
Implore his counsel and assisting might:
They never sought in vain that sought the Lord aright."

* * * * * * *

"Then homeward all take off their several way,
The youngling cottagers retire to rest;
The parent pair their secret homage pay,
And proffer up to Heav'n their warm request,
That He, who stills the raven's clamorous nest,
And decks the lily fair in flowery pride,
Would, in the way his wisdom sees the best,
For them and for their little ones provide;
But chiefly, in their hearts with grace divine preside.

From scenes like these old Scotia's grandeur springs,
That makes her lov'd at home, rever'd abroad:
Princes and lords are but the breath of kings,
'An honest man's the noblest work of God!'"

But you will say, What is the use of telling us about Scotland? What is the use of telling us we are sick, if you do not prescribe for us? How can we in England, where luxury is the hot-bed of vice, and money the god of our idolatry, rear our servants in virtue? By taking a lesson from the Scotch—by establishing in each town large infant schools for *larger* infants; institutions so arranged, that while moral habits are formed, the girls may be taught not only moral lessons and needle-work, but all the domestic work they, in their future servitude, may have to perform; where the boys may not only learn to read their Bible, but learn the rudiments of their intended trade also, and upon better and more scientific principles than they are ordinarily taught by the tradesmen; and their work, thus performed, might, with judicious management, be made even to maintain the schools.

If you have thought of my first observations on phrenology, you will remember that I pointed out to you that the animal passions occupied a large portion of the brain. Happily for mankind, the moral part is not naturally very small; and if this part receives its daily lessons in such an establishment as the one I propose, do you not think more effect will be produced upon it than by a seventh-day lesson only, the six previous days being abandoned to the passions?

From such an establishment, judiciously conducted, might you not expect moral servants and respectable tradesmen? Look at the Blue Coat Schools; they have reared some of the finest characters in the kingdom. I have complained of the public neglect and ignorance of the natural laws of the human body. How easily might you institute a public school of anatomy, physiology, and dietetics. In this place, for instance, there are many talented young medical men amongst you, who might be well, and honourably, and profitably employed in giving public instructions in the anatomy of the human body.

I am convinced, if the first outlay of a public Anatomical Theatre were obtained here, the anatomical school would maintain itself. Say for a course of twenty lectures on anatomy, ten on physiology, ten on chemistry, and five on dietetics (making forty-five) each student paid one guinea. I should think 100 students amongst the youths in this place might be found to attend. That would be £60 for the anatomical teacher, £20 for the physiological, £15 for the chemical, and £10 for the dietetic teacher; and surely this would be better than steeple-chasing, cigar-smoking, novel-reading, scandal-talking, and other occupations of the rising mind. The public good would not rest with the youth alone; you would ensure to all superior medical men, for nothing "whets the wit" better than giving public instruction; you would have your young medical men brought early before the public, some time before they got into practice, and their latent talent thus brought out, would be known and justly appreciated; and why might not this place set an example of the first public anatomical school in the kingdom? I am well convinced that it is little apprehended how much public support such an institution would receive, and I know, by the kind manner in which the public have regarded my Lectures, how ripe they are for receiving anatomical and physiological knowledge. But a few years ago I should have been hooted from a town, for daring to bring before the public "real" human skulls, and "real" human skeletons; and now, while I explain the beautiful contrivances of God in their formation and uses, a pin may be heard to drop amidst five or six hundred people; this augurs well for increased intelligence and diminished prejudice, and is, indeed, the surest blow at vice.

There is yet, besides a public anatomical theatre, a school for juvenile felons needed; a place where, instead of being turned adrift on the public, to follow their old vocations, they might be taken care of for a time, so as to receive moral instruction without the finger of scorn being pointed at them. How many juvenile desperadoes might be reclaimed by such an institution, in every county town in England? How many go into prison minor thieves, and come out accomplished villains? My ideas on this subject are embodied in the following verses:

THE FELON RELEASED FROM GAOL.

Oh! see that wan and hollow cheek, and mark those eye-balls glare,
And see those hands in anguish raised — the anguish of despair;
For since the day (his penance done) yon felon left the gaol,
Food scarce hath pass'd those lips, so parched, so bloodless, and so pale.

" Where shall I turn?" the wretch exclaims, " where hide my shameful head?
Where fly from scorn? Oh! how provide to gain my daily bread;
For work or alms I sue in vain, the scorners both deny,
I thirst, I starve, then what remains — this choice, to sin or die.

Here virtue spurns me with disdain, there pleasure spreads her snare,
Strong habit leads me back to vice, urged on by fierce despair;
Whilst hunger gnaws my heart, I strive to fly from sin in vain,
I yield to famine's tyrant will, and plunge in guilt again.

Oh! ye who 've shared a father's love, condemn not me, I pray;
Oh! ye who 've had a mother's care to lead ye on your way,
Condemn not me — an orphan, left to thread life's thorny path,
Nor wonder if he go astray, who none to guide him hath.

There 's mercy in each breath of air that mortal lips e'er draw —
There 's mercy in each beam of light that mortal eyes e'er saw —
There 's mercy both for man and beast, in God's indulgent plan —
There 's mercy for each creeping thing — yet *man hath none for man!*

Ye proudly honest, when ye saw my bleeding conscience groan,
Had generous hand, or feeling heart, one trait of pity shewn,
That act had spared these burning eyes, remorseless tears that roll;
Had fix'd my faith, confirmed my trust, and heaven had won my soul."

PHILADELPHIA PRISON.— This prison is a more interesting object to humanity than the most gorgeous palaces. Its exterior is simple, and has rather the air of an hospital than a gaol: a single grated door separates the interior from the street. On entering the court, will be seen stone-cutters, employed in sawing and preparing large blocks of stone and marble; smiths' forges are at work on one side; and the whole court was surrounded by a gallery, and a double tier of workshops, in which were brush-makers, tailors, shoe-makers, weavers, all at their several occupations, labouring not only to defray to the public the expenses of their confinement, but to provide the means of their own honest subsistence for the future. It had none of the usual features of a prison; neither the hardened profligacy which scoffs down its own sense of guilt, nor the hollow-eyed sorrow which wastes away in a living death of unavailing expiation: there was neither the clank of chains, nor the yell of execration; but a hard-working body of men were to be seen, who, though separated by justice from society, were not supposed to have lost the distinctive attribute of human nature: they were treated as rational beings—were operated upon by rational motives; and they repaid this treatment by improved habits, by industry, and submission. They had been profligate, they were now sober and decent in their behaviour; they had been idle, they were now actively and usefully employed; and they submitted (armed as they were, with all kinds of utensils,) to the government of a single turnkey, and the barrier of a single grating.—*Bingley's Travels.*

I can but just touch, as I have now done, on these subjects here, although they certainly come within the scope of such a theme as education.

Changes in Habit creating a Change in Brain.

With all these changes in the intellectual face of society which we daily see, is it not probable that the brain changes too?—In fact, I know it does; and that man would render a great service to the natural history of his species, who would compile an account of man, based on the development of his brain, through the manifold changes he has undergone in the flood of ages that has passed over him. I believe that there is a principle of progressive development in humanity, following hard on the heels of civilization; and I am borne out in this opinion by several writers of high capacity and great reflective powers. Vico, Condorcet, Cabanis, Lord Kaimes, Schlegel, Gall and Spurzheim,. Hegel Verité, and, above all, Michelet the historian, have satisfactorily demonstrated, from a certain order in the succession of historical events, and by a long chain of data following each other from the infancy of the world to its present age, that the principle of progressive civilization is a law of our nature.

Examine the heads of the mummies you meet with from Thebes, and many places in Egypt, and, though the veil of poetry has enwrapped them in glory, they are very inglorious-looking skulls! I do not now fear, since the Christian era, that a retrogression to barbarism will again be seen over any considerable portion of the habitable globe. The great nations of antiquity, viewed in their whole intellectual scope, even at this distance of time, and judged of by the fulness of our modern standard, present but a very circumscribed character. But if some great master mind could at this time take up the important subject of national education, and push it out as far as at present the people can bear, what might we not expect?—what changes would there not be wrought, both in intellectual acumen, in wisdom of conduct, and in power of judgment?—and these based on moral principles. What harmony in society might we not expect? Virtue would then be shown to be our policy, as well as the true basis of every thing that can elevate, every thing that can ennoble man. "That can ennoble man," I said—of course I mean mankind; and in giving this explanation, I am reminded that I have talked a great deal more about man than woman, and I have been also twitted with being rather censorious on some of the little peculiarities of women; if so, I am sure it is with a good intention. It is, however, high time they should be placed by me, as regards the subject of education, in their just and fair light; and with my feelings towards them, I am sure they will never be unjustly or harshly dealt with. I consider the nature of man and woman to be generally alike, yet I am sure nature has made some differences and dissonances. The form of the brain of the two sexes tells me this, as well as the different temperaments of the two; and so generally correct is this idea, that you often hear the expressions of "effeminate men," and "masculine women."

What is then, phrenologically speaking, the most striking difference of organization? In the head of women the sentiments and feelings are larger in proportion to their intellectual organs; their passions, like their voices, weaker; they are sought, rather than seeking; their moral sense is proportionally greater than man's. From their nature, then, and from their necessities, they are more likely to be the more domestic of the two. The world at large is more, by his nature, the domain of man. From their position, then, and perhaps from their nature, women rarely show themselves superior in the arts and sciences; their perceptive faculties and their feelings enable them to recite anecdotes well, to describe very accurately what they hear or witness; hence they are capital letter writers and witnesses. An observer at the trials before courts of assize and quarter sessions will discover, that females are much less disconcerted by cross-examination in the witness box, and tell their story with much less involution than men; their testimony resembling, in this respect, the evidence of young children, who, by the way, rarely break down, insomuch that a celebrated Irish counsellor, whose practice led him to much experience of this nature, has been known to declare that he would rather, for his client, meet any other evidence than that of a child, which, in his opinion, was the most difficult in the world to be overcome. Give a woman a subject, and she will fill a folio sheet, whilst a man would but just state the facts; they are admirable in details, but they do not, so generally, trace effects up to causes; hence their little prejudices and superstitions.

If I am correct in these premises, then, woman is better enabled, by her feelings, to sympathize with, and therefore to conduct, the early education of children; by her perceptives and love of detail, to preside over domestic arrangements; whilst man is best adapted to study the exact sciences; to provide for woman her proper sphere of action, and to excel in the heavier toils of business, political and social. Hence it has resulted, then, that woman should manage what are known by the term "domestic concerns of home," and inculcate the first principles of education into the children of both sexes. She is organized, too, to be by her nature the amiable and intelligent companion — the solace of her husband. Is woman rightly educated, to ensure these comforts to herself, and blessings to her husband? I, for one, think not. In many countries they are made mere slaves, but I will have nothing to do with those places, and therefore I shall confine myself to woman in England. Although in no country that I am acquainted with have I ever seen any approach to the domestic happiness and order of England, yet I cannot help thinking that this may be improved by further alterations. I do believe that objects of secondary importance, mere accomplishments, are studied first, and those real objects essential to their happiness, last of all, or not at all. But, mind, I blame the men for this, in their not choosing wives from the really useful, and leaving the *very* accomplished ladies (who have not the former qualities) unmarried till they have learned them, and then, "I guess," the tide of female education would flow another way. But, to be serious, I am convinced that the cultivation of all these graces, virtues, and affections, which shed a beam of happiness over mankind, which make women admired, esteemed, respected, and loved, and make man better, happier, and more religious, is especially the business of woman.

The very alliance which nature has created betwixt mother and child best befits women for our earliest instructors. Even as we grow older, the purity of woman's mind overawes the most turbulent, and she may, if she pleases, by this attribute alone, draw the most headstrong man by a "silken thread;" her very placidity and gentleness disarm us; and if she possesses firmness, too, the boldest man will succumb to her; that is, if he have not truth, justice, and reason on his side of the question. Now it is but fair, as she is evidently so powerful an antagonist, so much a match for us when opposed, that I should tell my young gentlemen hearers how to come off always victorious with women. Now, gentlemen, I am sure you begin already to think of the obligations you will be under to me for this news — your gratitude must be quite burthensome. Never enter the lists with women, unless you have truth, justice, and reason to back you; and, with such aids, you will be sure to come off victorious.

But, to return. The natural tie betwixt mother and child forms the best security that she will be interested to do her duty by her child, if she knows how; and the natural tie betwixt child and mother forms the best security for early instruction being received with attention and profit. And such is the nature of our minds, that that tie becomes strengthened by being exercised, insomuch that a judicious mother actually prepares for herself, whilst she plants it, a soil that must be prolific. Therefore, an mportant branch of female education is the acquirement of that kind of knowledge which will enable a mother to direct successfully, first the moral, and secondly the rudimentary, intellectual education of her family. She must understand the desires, the emotions, and the early perceptive and intellectual appetites of her children, before she can appeal to or appease them. She must understand the structure and functions of their bodies, before she can understand how much exercise their minds will bear without injury to their bodies. A mother will have but a poor chance of training faculties of mind, or powers of body, without understanding the tenderness of the one or the laws of the other; and she will find herself exceedingly puzzled, before she has been a mother four years, to answer enquiries which her child will make, if she does not understand something of "the physical properties of bodies." If her own ideas are contracted, she will contract those of her children, by telling the little inquisitive things, as I often hear them told, that "it is very rude to ask questions." If she have acute senses, though uncultivated, how acutely she must feel her own want of knowledge, which compels her to practise this subterfuge on her confiding child, who looks to her to know every thing.

The elements of chemistry, which teach the "qualities of bodies," are easily learnt; the elements of natural philosophy are not difficult; natural history, too, is a pleasing study; and enough of anatomy and physiology to understand the structure of her child may be readily acquired by even a moderate intellect. The rudiments of history and geography may be taught almost in play.

You now see why I would have a public school for anatomy and physiology in every community, that young persons may, with little expense and trouble, readily acquire rudimentary knowledge of those subjects which, in after years, it will become their province to teach.

You perceive "the mother" has it in her power to exert an enormous influence on the character of the children; and you know, "as the twig is bent, the tree 's inclined." Add moral and religious instruction to my plan — sow the seeds of these with those of other plants, and if then philosophy mislead (though I do not believe it ever will) the young mind to look to secondary instead of first causes, moral and religious instruction will correct this error.

What I condemn in modern instruction is, the teaching of music, drawing, and conventional manners, to such an extent as to absorb the time for application to more important studies. The fashion is to make children into men and women before nature intended it, or good sense sanctions it. The consequence is, that early maturity is induced, and that brings early decline. Children are introduced into society, and made to play a part in it, when they should be at school or in the study, and I had almost said in the nursery. I do not say that woman should not be taught elegant and refined accomplishments, for these, united to her own exquisite sensibility, shed around her a halo nothing on earth surpasses; an enlightened, refined, and elegant woman is the most lovely and perfect of God's works.

All I contend for is, that you should first establish a solid foundation for these accomplishments; that you do not foolishly begin to polish your marble before you have ascertained that the stone is susceptible of it, or all your labour comes to nothing. All kinds of reading, except novels and such frivolous books, have been considered in the higher walks ungenteel, and the taint, by imitation, is soon extended to the lower grades. The beauties of nature, the triumphs of science, the wonders of art, and any display of unsophisticated, honest sentiment, have been considered unnecessary for females; and for this I condemn man. Too often uninformed in these themselves, they condemn their acquisition in woman. But how will the mother give a taste for such pursuits to her boys, without having herself a preliminary knowledge of them? As soon as the laws of nature begin to take root in the perceptives of her children, the causes of those laws will awaken their reasoning powers. They will naturally consider that these had a beginning, and may have an end. The nature and attributes of God will begin to interest them. His power, His wisdom, His eternal existence, His charity, and His love will arouse their gratitude, and awaken their natural sentiments of devotion; and then the words they were taught daily to repeat, before their unfolded minds comprehended their force, will afford them aspirations for thankfulness and devotion.

The histories of the Bible and New Testament will therefore interest them, when, abstractedly considered, they might otherwise appear laborious and dull. They will find that christianity directs them for good. The precepts of christianity will tincture the mind with its future principles of action. How noble, how surpassing all that is human, is that expression of our Saviour, "If I do not the works of my Father, believe me not." This impression of the young mind, that it is not merely knowing the works, but doing them, and making them the guides of their conduct towards each other, will be the foundation that young mothers can, if they will, establish in their children, before they go into the world, as their duty to their neighbour. Therefore Christ commands, "Whatsoever ye would that men should do to you, do ye even so unto them;" and again, by this shall all men know that ye are my disciples, "if ye love one another." So that mothers, in the education of their children, will teach them to distinguish between those who proclaim that they are christians and "do not Christ's works." They may even be taught to examine these; for St. Paul says to the Corinthians, "Judge ye what I say—prove all things, and hold fast that which is good." "Believe not every spirit, but try the spirits." Thus they are taught to beware of false Christs and fale prophets; false philosophers, and false men.

You see, then, over how wide a field education extends; you know the shortness of our existence here—"Life is short, and art is long." Was I wrong, then, in saying that education begins with our birth, and ends only with our existence here? Through the exercise of our numerous faculties, which are so many appetites requiring food, God has provided us with employment enough for a much longer period than is allotted us; and in that employment, namely, the satisfying our intellectual appetites, he has chosen to sweeten the consequent toil, by making us enjoy a pleasure at every step. By acting wrongly, man turns pleasure into pain, and even that pain may be turned to account as a contrast to the coming pleasure. The moderate employment of our faculties brings pleasure; their immoderate excitement, pain. Idleness is one of the most certain sources of pain and disquietude, and should be more censured by society than it is; for if a man does not earn his own bread, he eats the bread of the industrious man, and therefore robs him of his time.

In this very novel mode of treating corporeal, moral, and intellectual education, though I have been far from fulfilling all that I proposed to myself to do, I have endeavoured to give you some new ideas of the physiology of several parts of our frame; I have shown you how imperfections and diseases of the body may be handed down, and may retard or destroy the functions of the mind. In unfolding some of the laws of the mind, I have endeavoured to point out to you how it may, by being too much wrought, injure, disease, or deform the body. I have hinted, occasionally, at the best means of securing to yourselves healthy children. I have very imperfectly treated moral and religious education. Here I feel my own deficiency; but from the members of that profession, which we ought all to respect, and by which respect we shall, I hope, ever distinguish ourselves as a nation, both morally and intellectually, you will have ample opportunities to obtain for yourselves, in other places, what my own deficiency makes me omit here. If I have—I hope for good—ventured to criticise some of the failings in the education and habits of our fair friends, I have never meant to depreciate their virtues. The estimation in which we hold the softer sex, will ever be the test of our civilization; and further, I would say to the ladies, that the power is in their own hands, not only to make man happy, but good. To them is entrusted the early bias of all our characters. Genius, according to certain laws, owes more to its mother than to its father; and, had I time, I could show you, by hundreds of great names, from early history down to our own time, that it is greatly dependent on the mother what the child may be. It is well devised that the nature of woman is sensitive; perhaps her feelings are, by this very sensibility, easily wounded; and, being wounded, sometimes very plaguy to us poor men; but we must not forget the affections women yield to us; the toils they cheerfully undergo for us; the pardon they too readily grant to our sins against them; the mode in which, by a "silken thread," they lead us to good; their solace in sickness; their cheering encouragement in our difficulties; their blessings on the bed of death. But Sir Walter Scott says all this better than I can, in four lines:—

> "O woman, in our hours of ease
> Inconstant, coy, and hard to please—
> When pain and anguish wring the brow,
> A ministering angel thou!"

The book on the "Education of the Feelings," I could wish you to do me the favour to read. It is but a short treatise; perhaps it is issued, like a pilot balloon, to try the wind before a larger one sails. It embraces many of my own ideas, which, if they are worthy, may be yours for a trifle.

In conclusion, let me thank you for the very flattering reception this all-important subject has met with at your hands. Your kindness and attention are worthy of better efforts than mine. I feel that I have advanced much, both in style and in matter, to find fault with. But I endeavour to persuade myself, if I had been more scientific, to many I should have been more dull; and if the anecdotes I introduce are homely, they have had the effect of relieving the mind from abstruse attention. And now, Ladies and Gentlemen, I bid you farewell. If I have amused you, I am satisfied; if I have instructed you, I am delighted; if I have contributed to make you wiser or better, my gratitude is due to a "Higher Power," which "makes all things work together for good."

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